AGRICULTURAL IMPORTS OF TURKEY

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ABSTRACT

AGRICULTURAL IMPORTS OF TURKEY

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This thesis analyses the agricultural import demand of Turkey for the period 1993-2009. The main objective of the thesis is to assess the reason for the rapid increase in imports. Turkey has a trade surplus since 1993, yet, imports have surged since 2001. In this study import demand has been analyzed descriptively i.e., the developments in foreign trade have been described by the help of available, official trade statistics. Increasing population, economic growth (income) and overvalued exchange rate are among important factors that give rise to this rapid import increase. Foreign relations, such as the World Trade Organization's Agreement on Agriculture (1995) and Free Trade Agreement with European Union (1997), play also an important role. Future developments of EU-Turkey relations and a new WTO Agreement (Doha) may become instrumental to convert Turkey to a net importer of agricultural products. Turkey may keep its net-exporter position also in the future by increasing her agricultural output and productivity rather than relying on protectionism.

Key words: Agricultural Import Demand of Turkey, Determinants of Import, WTO Agricultural Agreement, Free Trade Agreement, Membership of Turkey to the EU.

ÖZ

TÜRKİYE'NİN TARIMSAL İTHALATI

Durusu Çiftçi, Dilek

Yüksek Lisans, İktisat Bölümü

Tez Yöneticisi: Prof. Dr. A. Halis Akder

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Bu tezde, 1993 ile 2009 yılları arasında geçen dönemde Türkiye'nin tarım ürünleri ithalatı analiz edilmiştir. Bu çalışmanın esas amacı tarım ürünleri ithalat talebindeki hızlı artışın nedenlerini ortaya koymaktır. Türkiye, 1993 yılından bu yana tarımda dış ticaret fazlası vermektedir. Diğer taraftan, Türkiye'nin tarım ürünleri ithalatı 2001 yılından itibaren sürekli ve hızla artmaktadır. Bu çalışmada, ithalat talebi betimlenerek analiz edilmektedir. Türkiye'nin tarım ürünleri ithalatının artmasına neden olan başlıca faktörlerin arasında nüfus artışı, ekonomik büyüme ve döviz kurunun da önemli olduğu sonucuna ulaşılmıştır. Tarımsal ithalatın dışsal belirleyicileri olarak DTÖ – Tarım Anlaşması ve AB ile gerçekleştirilen Tercihli Ticaret Rejimi, Türkiye'nin tarımsal ithalatının geleceğini de etkileyecektir. Türkiye'nin olası AB üyeliği ve DTÖ' nün yeni tarım anlaşması ile olası tarife indirimleri sonrasında, Türkiye tarım ürünleri ticaretinde net ithalatçı olabilir. Net ihracatçı pozisyonunu koruması ithalatı yasaklamak, kısmaktan çok, tarımsal üretimini, verimliliğini geçmişte olduğu gibi artırabilmesine bağlı olacaktır.

Anahtar kelimeler: Türkiye'nin Tarımsal İthalatı, İthalatın Belirleyicileri, DTÖ Tarım Anlaşması, Tercihli Ticaret Rejimi, Türkiye'nin AB üyeliği

To my Mother, Gülsüm SONGUR

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CHAPTER 1

INTRODUCTION

In the last two decades, the share of the agricultural sector in the Turkish economy has fallen continuously; yet, agricultural foreign trade maintains its importance in Turkey. However, the narrowing difference between agricultural exports and imports is expressed as a problem by the public. But, many of such common arguments are just value judgments or misleading interpretation of the available statistics. The dispute goes on within the framework of agricultural policy i.e. microeconomics. However, major factors that give rise to agricultural imports should also be looked for in macroeconomic developments such as population increase, overvalued exchange rate and economic growth.

The main objective of this study is to bring up the reasons of rapid increase in import demand of agricultural products in Turkey. This study will analyze the import demand function descriptively. The components (explanatory variables) of the import demand will be described by the available trade and production statistics. The aim is to present a correct picture of agricultural trade.

The structure and development of foreign trade of agricultural products will be analyzed for the period 1993–2009 in Chapter 2. The trade data will be presented by commodity and geographic distribution. Chapter 3 is devoted to agricultural import price and quantity indexes. Chapter 4 is reserved for the econometric analysis for some agricultural products. In the next chapter, alternative classifications such as "raw material" versus "processed products" and "food" versus "non-food" products will be presented. In the same chapter, import demand for raw material by the export sector and import demand of agricultural products that cannot be grown (due to unsuitable climate) in Turkey will also be analyzed. Some explanatory variables' impact on

agricultural import demand will be analyzed in Chapter 6. These are "population", "income" and "exchange rate". Chapter 7 represents external determinants of agricultural imports. The first section in this chapter represents Turkey's agricultural foreign trade with the EU. The Preferential Trade Regime and Turkey's prospective membership will be discussed. Second section of Chapter 7 is devoted to the WTO – Agricultural Agreement and its impacts on agricultural imports of Turkey. Finally, concluding remarks are provided in Chapter 8.

The vast range of agricultural products allows several different classifications. Such classification changes from one country to another and even in the same country there are alternative classifications and revisions over time. Depending on the classification chosen, interpretations of agricultural foreign trade may differ. Consequently, while some studies state that Turkey has become a net importer country in agricultural products after the 1980's[1] , some express that it maintains its net exporter position[2]. It can be stated that, the choice of the type of statistical data may influence the outcome of the analysis. Therefore, it is very important to be transparent, i.e., to give detailed information on the statistical data used in this study.

The trade data used in this study is taken from Turkish Statistical Institute. For definition of agricultural products, the definition of the European Union is followed. For ease of reference, the Harmonized "GTIP" classification[3] system is used. According to this classification, in addition to 1-24 groups[4], raw hides (41), raw skins (43), raw silk (5001, 5002 and 5003), raw wool (5101, 5102 and 5103), raw cotton (5201, 5202 and 5203) and textile bast fibres (5301, 5302) are covered in the analysis.

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[1] See, Türkiye'de Tarım (2005), Tarım ve Köyişleri Bakanlığı, Türkiye'de Tarım (2008), Tarım ve Köyişleri Bakanlığı, Tarımsal Ekonomi Araştırma Enstitüsü

[2] See, Dölekoğlu (2003), Taşdan (2005)

[3] Gümrük Tarife İstatistik Pozisyonu (Customs Tariff Statistical Position)

[4] GTIP 3, "Fish and Fish Preparations" group is not included in the definition of the EU.

There are not any comprehensive academic studies under the title of "Agricultural Imports of Turkey". Therefore, this study derives its conclusions mainly from the primary data it uses. However, the study benefits from DTM, WTO sources and master and doctoral thesis and various academic articles on agricultural trade in general, too.

CHAPTER 2

AGRICULTURAL IMPORTS AND EXPORTS OF TURKEY

The share of the agricultural imports and exports decreased in the last two decades relatively, yet, agriculture maintains its importance. In this chapter, the structure and development of agricultural foreign trade of Turkey will be analyzed. Although the aim of this chapter is to focus on imports, this will be done together with exports. Because the information on exports together with imports presents a more complete picture on foreign trade and foreign trade policy.

2.1 Agricultural Foreign Trade Developments in Turkey and in the World

As it can be seen from Figure 2.1, Turkey has a foreign trade surplus since 1993[5]. After agricultural exports and imports increased during the 1993-1997 period, they stagnated until the year 2000. However, they started together to increase after 2001 again. Turkey's agricultural foreign trade surplus was largest in 2005 by 3 billion US Dollars. In 2008, agricultural imports and exports reached a peak and both of them decreased respectively by 26% and 2.5% in 2009.

Figure 2.1: Turkey's Agricultural Foreign Trade (USD million)
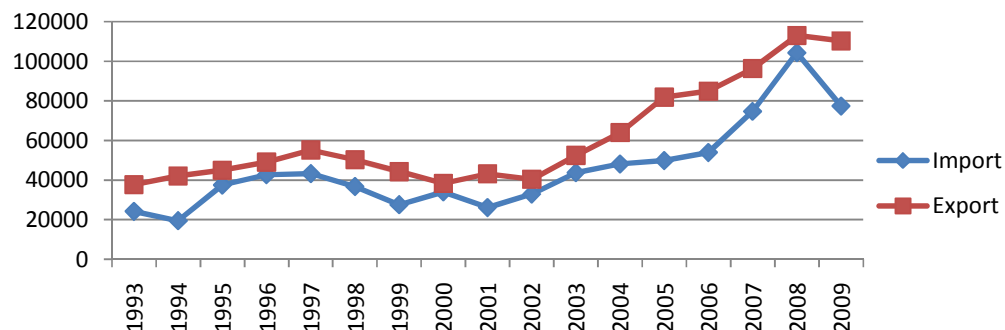
Source: Turkish Statistical Institute.

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[5] Turkey's Agricultural Foreign Trade (Million Dollars) can be looked at Appendix A.1

During 1993-2009 period, the share of both agricultural import and export's in total foreign trade decreased. According to the Turkish Statistical Institute's data, while agricultural imports accounted for nearly 24.5% in total imports of Turkey in 1993, it dropped down to 10.8% in 2009. Moreover, agricultural exports of Turkey accounted for nearly 8.2% in total exports of Turkey in 1993 and it was 5.5% in 2009. In short, agricultural trade increased at a slower speed than other main sectors in the economy.

As shown in Figure 2.2, share of agricultural products decreased in total imports of Turkey in last 17 years but, while Turkey's population increased nearly 1.2 times, agricultural imports increased 3.2 times in the same period. In addition, per capita agricultural imports increased 2.6 times.

According to the WTO's (2010a) data, the share of agricultural foreign trade in total foreign trade also decreased in the same period, too. In 1993, agricultural foreign trade accounted for 12.6% in total trade of the world and it decreased to 9.1% in 2009. While agricultural foreign trade increased 2.6 times, per capita agricultural foreign trade increased 2.1 times.

Figure 2.2: Share of Agricultural Foreign Trade in Total Foreign Trade in the Turkey and in the World by value, 1993-2009
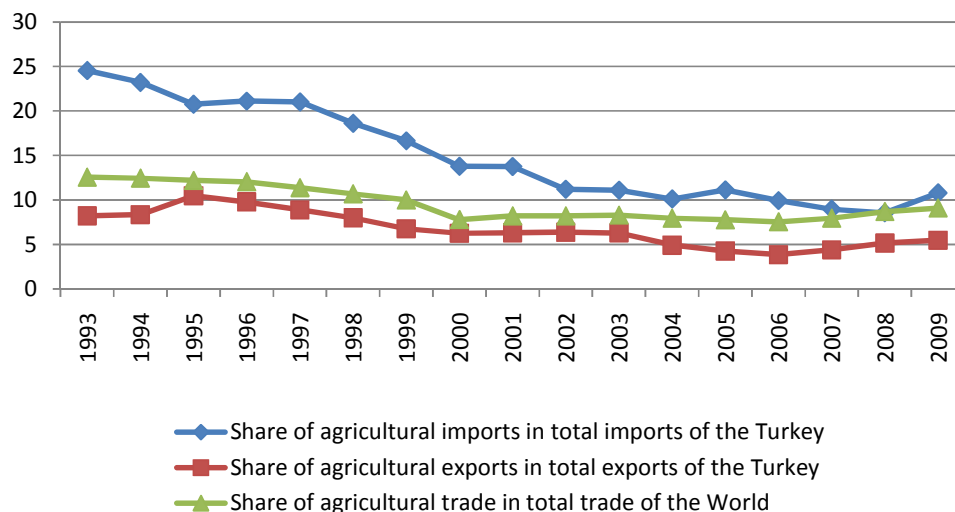
Source: Author's calculations based on the data from Turkish Statistical Institute and WTO (2010a).

In spite of the progress in liberalizing agricultural trade and increases in the trade volume, the share of agricultural products has decreased continuously. As a country's economic development level increases, the relative shares of industry and service sectors increase more than the agricultural sector. The Turkish economy experienced a similar process. Turkey's economic growth policy was "import substitution" before 1980's. During this period agricultural exports were the main exports of Turkey, yet, total volume of trade was small as the economy was protected. After 1980, Turkey shifted to "export oriented economic growth policy". Soon, non-agricultural exports exceeded agricultural exports and volume of trade expanded considerably. There were structural and technological factors why agriculture couldn't keep pace. But during both periods the political preference for industrial development over agricultural development was much stronger anyhow.

2.2 Commodity Composition of Agricultural Foreign Trade

Turkey's agricultural import has increased from 2000's permanently. This is not necessarily an alarming development, because the bulk of imported products are raw materials or intermediate goods which are processed and then exported again. With this point of view, agricultural products are classified in 30 groups.

There was a product concentration in agricultural imports in the period of 1993-2009. Ten groups of products, which are shown in Table 2.1, always constituted the first five ranks in agricultural imports of Turkey. The share of these products in total agricultural imports of Turkey was about 66%.

At the beginning of 1990's raw hides, animal and vegetable oil, cereals, cotton and tobacco were the major imported agricultural products of Turkey[6]. They together constituted almost 72% of total imported products in 1993. While Turkey's raw hide's and tobacco's share in total imports started to

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[6] Commodity Composition of Agricultural Imports of Turkey by value can be looked at Appendix A.1.

decrease in 2001, share of oil seeds and residues and wastes of food industry started to increase. Turkey's oils seeds imports reached about 1 billion US Dollars with a share of 13.6% and residues and wastes of food industry imports reached about 556 million US Dollars with a share of 7.2% in 2009.

Table 2.1: Share of Selected Products in Total Agricultural Imports, 1993-2009

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Raw hides	15.6	22.5	17.6	21.1	18.1	14		11.2	16.4	18.9	14.1	12	9.5	10.5	8.2		
Animal and vegetable oil	17.8	23.7	17.1	11.7	13	14.1	15.5	10.7	12	12.2	11.3	10.6	14.5	16.8	10.7	15.9	14.1
Cereals	14.9	8	12.1	18.1	16.2	12.7	14.6	11.4	6.9	11.4	15.9	10.8			13.0	20.5	15.5
Cotton	10.7	12.3	10.2	7.1	14.6	16.6	12.8	20.0	19.1	15.1	15.4	17.5	18.3	18.1	17.2	9.6	13
Tobacco & tobacco pre.	13.1	7.2			8.9		10.7	10.3	10.8								
Live animals			9.2														
Sugar and sugar pre.				6.86													
Oil seeds						9.6	9.6			8.2	11	11	14	11.4	13.7	14	13.6
Residues and waste from food industry													6.8			7.4	7.2
Mis. edible products														6.2			

Source: Author's calculations based on the data from Turkish Statistical Institute

Moreover, live animals, sugar and sugar preparations and miscellaneous edible products captured the first five ranks of total imports in various years. The other important import-products, whose domestic production are not sufficient to domestic demand or cannot be grown in Turkey, are coffee, spices and some (tropical) fruits.

Nine product groups that are listed in Table 2.2 took always the first five ranks in agricultural exports of Turkey. The share of these products in total agricultural exports of Turkey was about 64%. The most important export commodity among Turkish agricultural products was fruits in the 1993-2009

period. Hazelnuts, dried fruits and citrus fruits were traditionally the main export-products. In 1993, fruit exports accounted for 24.4% of total exports of Turkey and it increased to 27.2% in 2009. According to the FAO data, Turkey is the leader of the apricot, cherry and hazelnut producing countries.

Table 2.2: Share of Selected Products in Total Agricultural Exports, 1993-2009

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Fruits	24.4	26.5	27.5	23.2	23.7	25.8	28.2	26.9	27.8	29.5	26.5	29.8	30.6	28.1	27.7	25.3	27.2
Tobacco & tobacco pre.	11.7	10.1	8.49	13	12.4	11.7	12.9	12.8	10.1	9.5	8	7.5	7.2	8.1	6.7		6.9
Pre. of vegetables, fruits, etc.	9.6	11.8	11.8	11.5	11.2	12.4	12.7	12.7	12.2	12.8	12.8	15.3	15.7	13.2	13.7	12.8	11.6
Vegetables	9.3	8.1	8.42	9.7	8.89	7.8	6.2	6.9	8.7	8.0	9.0	7.6	6.5	8.3	8.9	8.4	9.3
Animal and vegetable oil			10.5	7.3	7.25	7.0	7.5				6.6		6.1	6		6.8	
Sugar & sugar pre.		7.4						6.1	7.8								
Pre. of cereal, flour, starch, etc.										4.1		4.8			5.5		6.1
Products of the milling industry																6.3	
Live animals	7.5																

Source: Author's calculations based on the data from Turkish Statistical Institute

Regarding agricultural export values[7], preparations of vegetables and fruits rank second with a share of 11.6%, which corresponded to 1.27 billion US Dollars in 2009. Other main agricultural export products were vegetables, tobacco and tobacco preparations. The share of vegetable exports in total agricultural exports was 9.3% in both 1993 and 2009. Raw tobacco constituted almost 80% of total tobacco and tobacco preparations exports and 78% of imports.

Animal and vegetable oil, sugar and sugar preparations and preparations of cereals, flour and starch etc. situated in the first five ranks of the total exports

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[7]Commodity Composition of Agricultural Exports of Turkey by value can be looked at Appendix A.2.

in some years. However, exports of live animals could not be ranked due to import prohibitions of other countries.

2.3 Geographic Distribution of Agricultural Foreign Trade

According to international trade data, Turkey exports agricultural products to more than hundred countries. However there is marked geographic concentration. In the 1993-2009 period, 34 countries accounted for nearly 81% of Turkey's agricultural export. The EU (15) played a significant role in agricultural exports of Turkey as the biggest importer country. The share of the EU (15) in total agricultural exports was about 46% annually. Apart from the EU countries, the USA, Iraq, the Russian Federation and Saudi Arabia were the important destinations of Turkey's agricultural exports in 1993.

Table 2.3: Geographic Distribution of Turkey's Agricultural Exports, 1993 and 2009 (USD million)

	1993		2009	
Country	Value	% in total export	Value	% in total export
USA	263	7.0	457	4.1
EU (15)	1642	43.6	3866	35.1
Australia	14	0.4	91	0.8
Brazil	38	1.0	41	0.4
Bulgaria	38	1.0	264	2.4
Indonesia	11	0.3	142	1.3
India	3	0.1	49	0.4
Iraq	129	3.4	1348	12.2
Iran	56	1.5	178	1.6
Japan	82	2.2	132	1.2
Kazakhstan	6	0.2	29	0.3
North Cyprus	28	0.7	124	1.1
Libya	141	3.8	103	0.9
Malaysia	7	0.2	25	0.2
Egypt	50	1.3	117	1.1
Uzbekistan	102	2.7	16	0.1
Rumania	72	1.9	7	0.1
Russia	174	4.6	855	7.8
Syria	57	1.5	228	2.1
Saudi Arabia	331	8.8	318	2.9
Turkmenistan	45	1.2	148	1.3
Ukraine	15	0.4	225	2.0
Other	446	11.8	1696	15.4

Source: Author's calculations based on the data from Turkish Statistical Institute.

At the end of the period, while the share of the USA, the EU (15) and Saudi Arabia in total exports decreased, the share of Bulgaria, Iraq, Ukraine and the Russian Federation increased. In 1993, the EU (15) accounted for 43.6% of Turkey's total agricultural exports; it decreased to 35.1% in 2009. The share of the USA decreased from 7% to 4.1% in the same period. However, Turkey's exports to Iraq increased significantly, from 3.4% (129 million US Dollars) to 12.2% (1.3 billion US Dollars).

As shown in Table 2.4, in 1993, Germany, Holland, Italy, England and France were the member states which constituted the first five ranks in agricultural exports from Turkey to the EU (15). The shares of these countries in total exports were 37.3%, 11.5%, 11.3%, 11.1% and 8.6%, respectively.

Table 2.4: Turkey's Agricultural Exports to the EU (15) and Share of Selected Member States, 1993 and 2009 (USD million)

Country	1993		2009	
	Value	% in total exports from the EU(15)	Value	% in total exports from the EU(15)
Germany	613	37.3	1188	30.7
Austria	67	4.1	93	2.4
Bel-Lüx	68	4.1	203	5.2
Denmark	21	1.3	57	1.5
Finland	5	0.3	9	0.2
France	142	8.6	365	9.4
Netherlands	188	11.5	518	13.4
England	182	11.1	346	9.0
Ireland	8	0.5	11	0.3
Spain	63	3.8	130	3.4
Sweden	19	1.2	52	1.3
Italy	186	11.3	602	15.6
Portugal	25	1.5	23	0.6
Greece	54	3.3	268	6.9

Source: Author's calculations based on the data from Turkish Statistical Institute.

In 2009, Germany maintained the first rank in agricultural imports of the EU (15) from Turkey. Italy and Greece attracted attention with the increases in their shares. Italy made 15.6% (602 million US Dollars) and Greece 6.9% (268 million US Dollars).

In the 1993-2009 period, 34 countries which are shown in Table 2.5, constituted nearly 77% of Turkey's agricultural imports annually. Together with the EU countries, the USA were the major exporters to Turkey. Turkey imported 616 million US Dollars (25.5%) of agricultural products from the USA in 1993. Although this value increased to 1.47 billion US Dollars in 2009, the share of the USA decreased to 19% in total agricultural imports. Furthermore, while the share of agricultural imports from the EU countries accounted for 23.7% in the selected period, it dropped down to 20.8% in 2009.

Table 2.5: Geographic Distribution of Turkey's Agricultural Imports, 1993 and 2009 (USD million)

Country	1993		2009	
	Value	% in total imports	Value	% in total imports
USA	616	25.5	1473	19.0
EU (15)	574	23.7	1606	20.8
Australia	83	3.4	26	0.3
Brazil	77	3.2	199	2.6
Bulgaria	27	1.1	176	2.3
Indonesia	11	0.5	155	2.0
India	19	0.8	106	1.4
Iraq	0	0.0	8	0.1
Iran	28	1.2	13	0.2
Japan	2	0.1	9	0.1
Kazakhstan	12	0.5	77	1.0
North Cyprus	8	0.3	29	0.4
Libya	4	0.2	3	0.0
Malaysia	99	4.1	263	3.4
Egypt	7	0.3	67	0.9
Uzbekistan	28	1.1	44	0.6
Rumania	45	1.9	13	0.2
Russia	42	1.7	812	10.5
Syria	33	1.4	20	0.3
Saudi Arabia	38	1.6	4	0.0
Turkmenistan	71	2.9	73	0.9
Ukraine	14	0.6	566	7.3
Other	586	24.2	1997	25.8

Source: Author's calculations based on the data from Turkish Statistical Institute.

While the share of the USA and the EU in total agricultural imports of Turkey decreased in 2009, the share of the Russian Federation (10.5%) and Ukraine (7.3%) increased. The major imports from Russia in recent years are cereals and raw vegetable oils. Consequently, the Russian Federation's share in total

agricultural imports increased significantly and this caused a relative decline in the shares of other countries'. Turkey's agricultural imports from the EU countries may be compared for the years 1993 and 2009 by the help of Table 2.6.

Table 2.6: Turkey's Agricultural Imports from the EU (15) and Share of Selected Member States, 1993 and 2009 (USD million)

Country	1993		2009	
	Value	% in total imports from the EU(15)	Value	% in total imports from the EU(15)
Germany	142	24.7	337	21.0
Austria	4	0.7	23	1.4
Bel-Lüx	14	2.4	49	3.0
Denmark	17	3.0	17	1.1
Finland	0	0.0	11	0.7
France	102	17.7	181	11.3
Netherlands	42	7.2	224	14.0
England	47	8.2	88	4.8
Ireland	7	1.2	25	1.6
Spain	42	7.4	110	6.9
Sweden	5	0.9	8	0.5
Italy	111	19.4	198	12.3
Portugal	0.5	0.1	10	0.6
Greece	40	7.1	324	20.2

Source: Author's calculations based on the data from Turkish Statistical Institute.

Germany ranks first in total agricultural imports from the EU (15) to Turkey as well as in exports. Other leading countries were Italy (19.4%), France (17.7%), England (8.2%) and Spain (7.4%) in 1993. In 2009, Germany maintained its first rank with a share of 21%. Increasing cotton imports from Greece and increasing tobacco imports from Netherlands altered the 1993 ranking. The share of Greece has increased to 20.2% (324 million US Dollars) and Netherlands to 14% (224 million US Dollars).

There is no precise definition of an "agricultural product". The decision to include a product under agriculture or to exclude it from the list is not done by the help of an absolute criterion but rather by practical judgment. We know that the list of agricultural products is extensive. It ranges from soybean to chocolate. However, this list and therefore the definition of "agricultural

products" vary from country to country. It may change further in future. Yet, each definition has its advantages and disadvantages.

In addition to definitions of the EU[8], hides, cotton, wool and silk which are raw materials for the industry are defined here, in this thesis, as agricultural products. The degrees of processing of these products are too low, so, it may be justified to define them as an agricultural product. This also eases the analysis of agricultural foreign trade statistics. In the following chapters, these statistics will gain in importance both in agricultural foreign trade and in agricultural policy analysis.

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[8] http://ec.europa.eu/agicultue/index_en.htm

CHAPTER 3

AGRICULTURAL IMPORT PRICE AND QUANTITY INDEXES OF TURKEY

Turkey's agricultural import has been increasing permanently since 2001. The trend of the agricultural "import value" increase is shown in the previous chapter. However, import values can be decomposed into price and quantity components. The trend of the import quantities and import prices (unit prices) explain to some extent, whether the increase in imports is due to "price" or "quantity" increases.

Various types of index numbers can be used to separate changes in exported quantity from changes in prices (Allen, 1953: 192). In this thesis, because of some practical and conceptual reasons, Laspayres index is used for quantities and Paashe index is used for prices so as to maintain the relationship below:

$$\frac{\sum P_t\,Q_t}{\sum P_0\,Q_0} = \frac{\sum P_t\,Q_t}{\sum P_0\,Q_t} * \frac{\sum P_0\,Q_t}{\sum P_0\,Q_0}$$

(Value index)= (Price index)*(Quantity index)

where subscripts "0" and "t" refer to the base year and the current year, respectively.

All the data necessary for this study has been obtained from the State Institute of Statistics of Republic of Turkey. Imports are given here including cost, fright and insurance (CIF). Quantities are measured usually according to their weight, yet, other physical units are used for the quantity measurement as well. These have been converted into kilogram and all prices and values are measured in US Dollars.

The products have been defined at six, five and four digit levels. It might be relatively easier to identify more homogeneous commodities by 6 digit-level but it is sometimes required to use four digit data for not losing certain observations. The commodities which are regularly imported can be representative for the variations in the foreign trade price indexes. Furthermore, the share of those commodities in total imports is also another important criteria. So, continuity and the representativeness of the commodity are taken into account in the selection of the commodities[9] included in the indexes. In the 1993-2009 period, some of the agricultural products were not imported in some years. However, the share of these products in total imports cannot be ignored. For such problem years, we opted for taking the commodity and filled the blanks with very small and appropriate values[10].

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[9] The agricultural products, which are excluded, can be looked at Appendix B.1.

[10] The data for some agricultural products are filled as follows: 30410 Fish fillets' quantity is filled with 1 and value is filled with 1 for the year 2002. 30730 Mussel's quantity is filled with 1 and value is filled with 4 for the years 1999 and 2002. 40390 Buttermilk's quantity is filled with 1 and value is filled with 10 for the year 1993. 40490 Other cheese's quantity is filled with 1 and value is filled with 4 for the year 1998. 40610 Fresh cheese's quantity is filled with 1 and value is filled with 2 for the year 2006. 71400 Vegetable products, roots and tubers' quantity is filled with 10 and value is filled with 1 for the years 1994 and 2001. 80130 Cashew nuts' quantity is filled with 10 and value is filled with 4 for the year 1993. 82400 Chestnuts' quantity is filled with 10 and value is filled with 2 for the year 1994. 82500 Pistachios quantity is filled with 10 and value is filled with 8 for the year 1994. 84200 Figs' quantity is filled with 10 and value is filled with 4 for the year 1993. 85400 Grapefruit's quantity is filled with 10 and value is filled with 1 for the year 2000. 90190 Coffee substitutes containing coffee in any proportion's quantity is filled with 1 and value is filled with 20 for the year 2009. 90220 Green tea's (exceeding 3 kg) quantity is filled with 1 and value is filled with1 for the years 1994 and 1995. 110510 Flour and meal of potatoes' quantity is filled with 1 and value is filled with 3 for the year 2003. 110820 Inulin's quantity is filled with 1 and value is filled with 76 for the years 1995 and 1996. 120500 Rape or colza seeds' quantity is filled with 2 and value is filled with 1 for the years 1993 and 1994. 120890 Flour and meals of other oilseeds or oleaginous fruits' quantity is filled with 5 and value is filled with 1 for the year 1993. 121300 Cereals straw and husks' quantity is filled with 10 and value is filled with 8 for the year 1993 and quantity is filled with 1 and value is filled with 3 for the year 2007. 130110 Lac's quantity is filled with 1 and value is filled with 10 for the years 2007 and 2008. 15100 Fats and oils of marine mammals' quantity is filled with 1 and value is filled with 1 for the years 2001 and 2002. 15600 Other animal fats and oils' quantity is filled with 1 and value is filled with 5 for the years 2005 and 2006. 150900 Other olive oil and its fractions' quantity is filled with 1 and value is filled with 2 for the year 1993. 151220 Cotton-seed oil's quantity is filled with 2 and value is filled with 1 for the years 2003 and 2004. 151410 Rape and colza seed oil's quantity is filled with 2 and value is filled with 1 for the year 1994. 152200 Degra's quantity is filled with 10 and value is filled with 1 for the years 2003 and 2004. 170220 Maple sugar's quantity is filled with 1 and value is filled with 4 for the year 1994. 170241 Glucose syrup's quantity is filled with 2 and value is filled with 1 for the year 2008. 190300 Tapioca's quantity is filled with 1 and value is filled with 2 for the year 2001. 190510 Crisp bread's quantity is filled with 1 and value is filled with 3 for the year 1995. 200570 Olives' quantity is filled with 1 and quantity is filled with 2 for the year 1994. 200600 Vegetables, fruits and other edible parts of the plants' quantity is filled with 2 and

At the end of the analysis according to the criteria mentioned above as homogeneity, continuity and the value share in total agricultural imports, 318 commodities for import are selected to be covered by the indexes. In the 1993-2009 period, their value shares in agricultural imports in the years 1993, 1994, 1995 and 1996 are 94%, 98%, 89% and 96% respectively and rest of the years are 99%. It is obvious that, the base year must be a "normal" year. Taking into account the period under consideration, 2004 is chosen as the base year.

Table 3.1: Agricultural Import Price and Quantity Indexes 2004=100

Year	Import Value Index	Import Price Index	Import Quantity Index
1993	48	77	62
1994	40	93	43
1995	69	99	70
1996	85	97	88
1997	90	105	86
1998	77	98	78
1999	57	78	73
2000	71	74	96
2001	55	75	73
2002	69	73	93
2003	90	81	112
2004	100	100	100
2005	104	74	140
2006	112	88	128
2007	155	107	144
2008	217	142	153
2009	161	116	139

Source: Author's calculations based on data from Turkish Statistical Institute.

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value is filled with 1 for the year 1993. 210230 Other sauces' quantity is filled with 1 and value is filled with 3 for the year 2003. 220500 Vermouth and other wines' quantity is filled with 1 and value is filled with 3 for the year 1999. 230300 Residues of starch manufacture's quantity is filled with 2 and value is filled with 1 for the years 1993 and 1994. 230800 Other residues of plants of a kind used for animal food's quantity is filled with 2 and value is filled with 1 for the year 1994. 510220 Other coarse animal hair's quantity is filled with 1 and value is filled with 1 for the year 1997. 520300 Cotton's (carded) quantity is filled with 1 and quantity is filled with 1 for the year 1994. 530200 Hemp's quantity is filled with 1 and value is filled with 1 for the year 2008.

For a better view, the indexes are presented also graphically. In the period 1993-2009, quantity indexes fluctuated. If the data is analyzed in detail, it is apparent that fluctuations in import quantity indexes were caused by imports of cotton and oil seeds. In 1994, import quantity of agricultural products decreased to the period's minimum amount. Moreover, the import quantities have increased from 2001, except in 2004, 2006 and 2009. On the other hand, import price indexes had an increasing trend in the 1993-1997 period. After 1997, agricultural import prices tended to decrease until 2002. But, as shown in Figure 3.1, price indexes increased again in 2006-2009 period. The detailed analysis shows that, these increases were caused mainly by the imports of animal and vegetable oil, cereals, oil seeds and cotton. Apparently, the import prices and import quantities reached a peak in 2008. While the quantity index increased 53% relative to the base year 2004, the price index increased 42%, yet, since 2001 price indices are higher than quantity indexes. This may be an indication for future. The volume of imports will increase in near future probably more due to price increases rather than quantity increases. It is also interesting to observe that for the same price index the quantity imported increased considerably. For example, while price indexes were 74 in both 2000 and 2005, quantity indexes were 96 and 140 respectively. There are more of such observations. This may indicate that imports are not necessarily increasing because they are cheaper now but domestic demand (for intermediate products) is shifting to the right, too.

Figure 3.1: Import Price and Quantity Indexes 2004=100
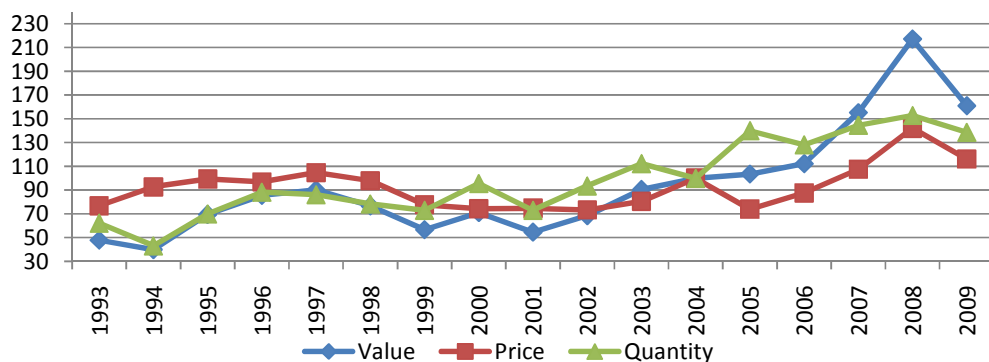
Table 3.2: Agricultural Import Price and Quantity Indexes of Food Products 2004=100

Year	Import Value Index	Import Price Index	Import Quantity Index
1993	47	70	66
1994	29	79	37
1995	74	76	97
1996	107	77	138
1997	92	88	104
1998	73	84	87
1999	63	75	84
2000	67	72	92
2001	42	65	66
2002	63	73	87
2003	94	81	115
2004	100	100	100
2005	95	96	99
2006	111	102	109
2007	185	127	145
2008	318	171	187
2009	221	132	167

Source: Author's calculations based on data from Turkish Statistical Institute.

Table 3.3: Agricultural Import Price and Quantity Indexes of Non-Food Products 2004=100

Year	Import Value Index	Import Price Index	Import Quantity Index
1993	48	80	60
1994	44	98	46
1995	67	115	58
1996	76	114	67
1997	90	114	78
1998	78	105	75
1999	54	79	68
2000	73	75	97
2001	60	78	76
2002	71	74	96
2003	89	80	111
2004	100	100	100
2005	107	68	158
2006	113	83	136
2007	143	99	144
2008	174	126	138
2009	135	107	126

Source: Author's calculations based on data from Turkish Statistical Institute.

For a more detailed analysis, agricultural products were grouped as "food" and "non-food" products. According to the criteria of homogeneity, continuity and value share in food and non-food agricultural products[11], 182 commodities for food imports and 135 commodities for nonfood imports are selected and covered by the indexes[12]. It can be seen from Figure 3.2 and 3.3 that, fluctuations in price indexes of the agricultural products was caused mainly by non-food agricultural products, because price indexes of food products had a quite stable trend until 2004. Moreover, import prices of both food and non-food products tended to increase from 2005.

Since 2001 the statistics indicate that, more non-food agricultural products can be imported with lower prices. For example, while price indexes were 105 and 99 respectively in 1998 and 2007, quantity indexes were 75 and 144 respectively. On the other hand, a similar observation does not hold for food products. Consequently, since non-food products have a larger share in Turkey's imports, decreasing raw material prices were probably important reasons of rapid increase of the agricultural imports of Turkey. However, this trend seems to be reversed. In 2010-2011 agricultural commodity prices started to increase sharply.

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[11] The data for food Products are defined as follows: GTIP 2, 3, 4, 7, 8, 90121, 90122, 90190, 90210, 90220, 90230, 90240, 90411, 90412, 90420, 90600, 90700, 90800, 90900, 91000, 10, 11, 150800, 150900, 151100, 151219, 151319, 151320, 151490, 151710, 151790, 151800, 170100, 170410, 170490, 180610, 180631, 180632, 180690, 19, 20, 210110, 210120, 210310, 210320, 210330, 210390, 210400, 210500, 210610, 210690, 22

[12] Import Price and Quantity Indexes for Food and Non-food Products as a Table can be seen from Appendix A.2.

Figure 3.2: Import Price and Quantity Indexes of Food Products 2004=100
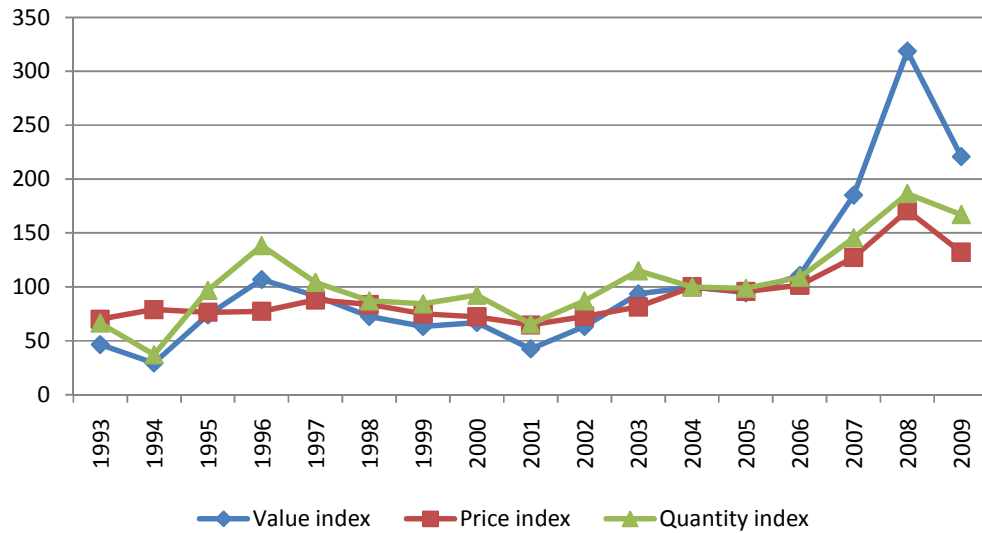
Source: Author's calculations based on data from Turkish Statistical Institute.

Figure 3.3: Import Price and Quantity Indexes of Non-Food Products 2004=100
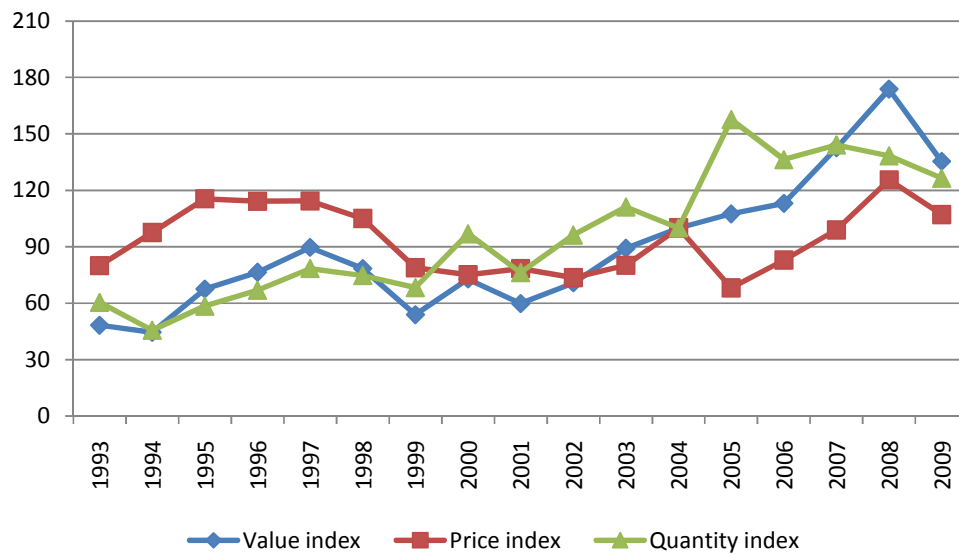
Source: Author's calculations based on data from Turkish Statistical Institute.

CHAPTER 4

AN ECONOMETRIC ANALYSIS FOR SELECTED AGRICULTURAL PRODUCTS OF TURKEY

The range of agricultural products is very wide from milk to cotton. All these products have different characteristics. Therefore there are many different explanatory variables which determine their import demand. Turkey's agricultural imports have been increasing, especially from 2000 onwards. It is easy to observe that hides, cotton, unrefined vegetable oil, tobacco and cereals are the main agricultural imports of Turkey. The common characteristic of all these products is that they are raw materials for the industry and some of these industries are exporting industries. In other words, the import demands of these raw materials depend also on the export supply of Turkey. However, the import demands for agricultural products depend also on income and prices.

One of the major methods of import data interpretation is the estimation of import demand by an econometric method. Empirical studies, that calculate income and price elasticities of import demand, are very important to form an international trade policy. In spite of this importance, if such calculations are carried out mechanically without much thought they may produce misleading results due to readily available data set. With this reservation in mind, income and price elasticities of some agricultural products will be estimated here.

4.1 Literature Survey

In the literature, the traditional approach to estimating import demand equations utilizes a specification involving relative price of imports and income. From an econometric point of view, the elasticities approach is based on the estimating import demand function. The econometric estimation

of the price and income elasticity of imports has produced a large literature. [13] In the study by Khan (1974), the import and export demand functions for the period 1951-1969 employing annual data for 15 countries[14] were investigated by using the following model specifications:

$$\ln M_{it}^d = a_0 + a_1 \ln (PM_i/PD_i)_t + a_2 \ln Y_{it} + u_t$$

where M_i is the quantity of imports of country i, PM_i is the unit value of imports in country i, PD_i is the domestic price level of country i, Y_i is the real gross domestic product of country i. Having estimated these functions using OLS, Khan reported that the prices did play an important role in the determination of imports of developing countries and Marshall-Lerner condition is satisfied. Moreover, another study by Goldstein and Khan (1985); provides a survey of studies on income and price effects in foreign trade, with an excellent discussion of the specification and econometric issues in trade modeling.

Warner and Kreinin (1983), estimated import and export demand functions for the periods 1957:1-1970:4 and 1972:1-1980:4 employing quarterly data for 19 industrial countries[15]. In this study, there are two distinct investigation periods, the periods of fixed and flexible exchange rate regimes to analyze the behavior of the model in two periods. They estimated the import demand functions as Khan (1974) did, but they also repeated the estimation after excluding the petroleum products. Warner and Kreinin reported that the introduction of floating exchange rates appeared to have affected the volume of imports in several major countries, but the direction of change varied between them.

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13 See, also, Murray and Ginman (1976), Khan and Ross (1977), Faini, Pritchet and Clavijo (1988), Marquez (1990), Fullerton-Sawyer-Sprinkle (1997), Bahmani-Oskooee-Niromand (1998), Dutta and Ahmed (1999), (2006), Narayan and Narayan (2005).

14 Included countries are Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Ghana, India, Morocco, Pakistan, Peru, The Philippines, Sri Lanka, Turkey and Uruguay.

15 Included countries are the United States, Germany, France, Japan, the United Kingdom, Canada, Italy, Netherlands, Belgium, Sweden, Denmark, Switzerland, Norway, Finland, Austria, Spain, Ireland and the New Zealand.

Bahmani-Oskooee (1986), used quarterly data for 1973-1980 period, and provided the estimates of aggregate import and export demand function for seven developing countries[16]. The import demand equation used in this study is:

$$\ln M_t^d = a_0 + a_1 \ln Y_t + a_2 \ln (PM/PD)_t + a_3 \ln E_t + u_t$$

where, M is the quantity of imports, PM is the import price, PD is the domestic price level, Y is the real GNP, E is the effective exchange rate. They also provided estimates of price and exchange rate response pattern by introducing a distributed lag structure on the relative prices and on effective exchange rate. Bahmani-Oskooee's findings shows trade flows are more responsive to changes in the relative prices than to changes in the exchange rates.

Deyak-Sawyer-Sprinkle (1993), provided estimates of the sensitivity of Canadian import demand to changes in income, prices and exchange rates. They used quarterly data for the period of 1958-1989. They concluded that, import demand is relatively elastic in income and relatively inelastic in prices compared to previous studies about Canadian import demand.

Hauthakker and Magee (1969), estimated demand elasticities for both imports and exports with respect to income and price within the United Kingdom, Japan and the U.S. using the OLS method of estimation. They used annual data for the period 1951-1966 for 26 countries. Hauthakker and Magee reported that the U.S. income elasticity of demand for total imports is about the same as that of other developed countries, but the income elasticity of other countries' demand for U.S. exports is relatively low and therefore, trends for the U.S. trade balance have worsened over time.

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[16] Included countries are Brazil, Greece, India, Israel, Korea, South Africa and Thailand.

Dash (2005), studied Indian import performance and use annually data for the period 1975-2003. Cointegration and error correction techniques have been used in this study. The import demand equation used in this study is:

$$\ln M_t^d = a_0 + \ln GDP_t + a_1 \ln PM_t + a_2 \ln PD_t + a_3 \ln R_t + u_t$$

where Mt is the quantity of imports, GDP is the gross domestic product of India, PM_t is the unit value of import prices, PD_t is the unit value of the price index of domestically produced goods of India, R_t is the foreign exchange reserves of India. Dash reported that, import demand is largely explained by price of domestically produced goods, GDP, lag of import and foreign exchange reserves.

Khosrow, et al. (1994), estimated import demand function of Saudi Arabia with an alternative empirical function. They used annually produced data for the period of 1963-1990 and used OLS method of estimation. The import demand equation used in this study is:

$$\ln M_t^d = a_0 + a_1 \ln Y_t + a_2 \ln PM_t + \ln PD_t + \ln M_{t-1} + u_t$$

where, M is the quantity of imports, PM is the import price, PD is the domestic price level, Y is the real GNP, M_{t-1} is the lagged quantity of imports. They reported that the income elasticity of import demand is inelastic in the long run. Moreover, there is a fairly large response of import volumes to changes in the import and import competing prices.

Regarding the Turkish case of the import demand function, Erlat and Erlat (1991), studied Turkish export and import performance. They used annually produced data for the period 1967-1987. Export supply, export demand and import demand functions are estimated by OLS first, then, three equations are estimated as a set of seemingly unrelated regressions. Total volume of imports is regressed on domestic real income, price of imports divided by

domestic prices, real international reserves and one period lagged of the dependent variable. International reserves are found to be most important variable explaining import demand. However, relative prices have no significant explanatory power on import demand.

Kotan and Saygılı (1999), elaborated on two different model specifications, namely those of the Engle-Granger cointegration and Bernanke-Sims structural vector autoregressions. The estimation performance of the two models compared for the period 1987Q1-1999Q1 by using quarterly data. In the first model, it is found that long-run income level, rate of nominal depreciation, inflation rate and international reserves significantly affect imports. In the short-run, inflation growth and growth in international reserves lose their significance. The second model's findings indicate that anticipated changes in the real depreciation rate and unanticipated changes in the income growth and real depreciation rate have significant effects on import demand.

Kalyoncu (2006), estimated an aggregate import demand function for Turkey, for the period 1994:1-2003:12. In the empirical analysis, the cointegration and error correction modeling have been used. Kalyoncu reported that, there exist a unique long-run or equilibrium relationship among real quantities of imports, relative import prices and real GNP.

Secondly, an extensive literature has evolved in the past decades using economic theory to estimate the disaggregated import demand[17]. Lordkipanidze, et al. (1996) analyzed the factors on import demand of canola oil in the USA. The import demand for canola oil was specified as a function of its own import price, prices of substitute edible vegetable oil, disposable personal income, the Canadian- US Dollar exchange rate, lagged imports, trend factor and seasonality. Lordkipanidze reported that, based on analysis of monthly data for January 1989 through October 1993, the USA import

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[17]See ,also, Reed and Schnepf (1982), Karkacıer (2000), Kang and Kennedy (2009).

demand for canola oil was mostly influenced by prices of substitute vegetable oils, exchange rate and the change in consumers' preferences.

Göktolga (2006), examined factors that affecting import demand for meat products of Turkey during the period of 1984-2004. Total import demand of meat and meat products is regressed on per capita gross national product, real domestic prices of meat and meat products, exchange rate, import demand of meat and meat products for previous year and trend factors. Göktolga concluded that, exchange rate, lag values of import demand for meat products and trend factor are statistically significant variables but per capita income and real domestic prices of meat products are not statistically significant variables.

Kızılaslan and Kızılaslan (2006), studied the economic factors which have influence on the import demand for vegetal oil and vegetal oil products in Turkey. They used annual data for the period of 1981-2001. The value for the demand amount of import for vegetal oil is regressed on the amount of delayed import, the average real price of national oil and products, the rate of exchange for US Dollar, the trend factor, the real production value of vegetal oil and its products, the real value of national demand and gross national product. According to the findings of the research, it was concluded that the import demand for vegetal oil and its products was determined by the amount of lagged import, the rate of exchange for US Dollar and a trend factor.

In the study by Yazdani et al. (2008), the corn import demand for the Iranian economy was estimated. Total quantity of corn import demand regressed on corn relative prices, per capita national disposable income, corn domestic product, corn domestic consumption, governmental stock corn and corn insurance. They concluded that, all variables as significant determinants of import, except per capita national disposable income.

Uzunöz and Akçay (2009), analyzed the factors affecting import demand for wheat during the period of 1984-2006 by using double-log linear function. Turkey's import demand for wheat was specified as a function of domestic prices, gross national product per capita, exchange rate, lagged import demand, production value of wheat, domestic demand and trend factor. They reported that, a change of domestic wheat price has a strong impact on the wheat import demand and in time Turkish consumers would purchase domestic wheat rather than imported wheat.

Tanyeri - Abur and Rosson (1996), estimated the NAFTA and Mexico import demand of dairy products during the period 1975-1995. The import demand equation used in this study is:

$$\ln M_{I,t}^d = a_0 + a_1 \ln Y_t + a_2 \ln (PM/PD)_{I,t} + a_3 \ln M_{I,t-1} + a_4 d_t + u_t$$

where $M_{I,t}$ is the imports of product i in period t, $M_{I,t-1}$ is the imports of product I in time period t-1, PM is the import price, PD is the domestic price of I, Y_t is the real GDP. They reported that, there is a very strong relationship between income and import demand of dairy products. The real exchange rate is also significant, although the elasticity is much lower than the income elasticity. Moreover, import of the previous periods is significant for import demand of dairy products.

4.2 Model and Econometric Tools

Econometric investigations of import demand postulate that the demand for import is a function of relative prices, real income and lagged quantity of the dependent variable. The relative price measure is often the ratio of the import price to the domestic price for the commodity adjusted for the exchange rate which gives a measure of the real exchange rate (See, Kahn, Warner and Kreinin, Bahmani and Oskooee, for examples of import demand functions). A lagged dependent variable is also added as in the study of Dash, Khosrow, Erlat and Erlat and Tanyeri-Abur and Rosson. Because it is the most

common import demand model in the literature, the model which was used in Tanyeri-Abur and Rosson's study is applied to some of the agricultural products of Turkey, separately in this study. The function is in general form as in the following:

$$M_{i,t} = f\ (\ (P_m{}^*e/\ P_d)_{i,t},\ Y_t,\ M_{i,\ t-1})$$

Where**:**

$M_{i,\ t}$ = Quantity of imports from country i in period t

$M_{i,\ t-1}$ = Quantity of imports from country i in period t-1

$(P_m{}^*e/\ P_d)_{i,t}$ = Import price * exchange rate / domestic price of country i in period t

Y_t = Per capita gross domestic product of in period t

As it has already been mentioned, all major studies regress import volumes on relative import prices and domestic income. While doing this, the underlying framework is the imperfect substitute model of the trade literature. As it was discussed in Khan and Goldstein's work in detail, if domestic and foreign products were perfect substitutions, then we should observe either of the goods having market share of unity and each country acts as an importer or exporter of a traded product but not both. Theoretically, price and income elasticities are expected to have negative and positive signs, respectively. We expect the import quantity to shrink as the relative price increases because in this situation, domestic products become cheaper. Moreover, we expect the import quantity to expand as the per capita income increases.

The lagged import variable has a role defining the regulator influence of the adaption of income and price changes within time on import. That is why it was included in the model (Lordkipanidze (1996)). Its expected sign is also positive.

The period of estimation is 1998-2009. In order to estimate this model, pooled cross-section time series data were used for most important agricultural import products. The cross-section elements used in this study are countries and they were changed for each 11 different agricultural commodities[18]. In spite of the import of these products being analyzed individually, the results of the estimates will be showed in a table together.

Import prices were calculated from the data of Turkish Statistical Institute. Import values were divided by import quantities to obtain the unit-prices for imports. These were then multiplied by exchange rate and divided by domestic prices. Income is per capita Gross Domestic Product is also obtained from Turkish Statistical Institute as well.

Double-Logarithmic linear function was used to determine the type of function. This form is generally used in import demand estimation (See all of the studies that mentioned above), for its ease of interpretation, as coefficients of the log-linear equation are elasticities. The estimated equations are defined as:

$$\ln M_{i,t} = b_0 + b_1 \ln (P_m/P_y)_{I,t} + b_2 \ln Y_{i,t} + \ln M_{i,t-1} + u_t$$

4.3 Results and Discussion

Results of the estimations are displayed in Table 4.1:

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[18] **For cotton**: USA, Greece, Turkmenistan, Mersin Free Area, Row. **For oil seeds**: USA, Ukraine, Rumania, Row. **For wheat**: Russia, Kazakhstan, Hungary, MENA, Row. **For maize**: USA, France, Germany, Italy, Argentina, Rumania, Hungary, Row. **For rice**: Egypt, Thailand, Italy, Russian, Pakistan, India, Row. **For feeding stuff for animals**: USA, Italy, England, France, Germany, Holland, China, Canada, Greece, Hungary, Spain, Denmark, Austria, Israel, Belgium-Luxembourg, Ireland, Row. **Residues of soybeans**: USA, Argentina, Brazil, Holland, Row. **For dry pulses**: USA, China, EU (15), Canada, MENA, Latin America, Row. **For bovine hides**: USA, EU (15), MENA, Turkmenistan, Australia, Bulgaria, Row. **For tobacco**: USA, China, EU (15), Brazil, Argentina, Malawi, Row. **For unrefined vegetable oil**: USA, Argentina, Russia, Ukraine, Greece, Row.

Table 4.1 Estimated Import Demands of Selected Agricultural Products

Commodity	Constant	P_m/P_y	Y_t	M_{t-1}	R^2	Adj-R^2	DW
			Variables				
Cotton	14.965	-1.325	0.489	0.200	0.852	0.832	1.859
	(6.48)	(-2.27)	(2.04)	(1.46)			
Bovine hides	7.187	-0.458	0.727	0.417	0.830	0.807	1.949
	(2.67)	(-2.88)	(2.20)	(4.10)			
Tobacco	8.571	0.308	0.777	0.364	0.852	0.832	1.859
	(3.94)	(-0.96)	(3.12)	(3.02)			
Wheat	0.801	-3.130	1.909	0.159	0.633	0.582	2.090
	(0.13)	(-4.09)	(2.65)	(1.20)			
Residues of soybeans	-27.737	-2.440	4.483	0.825	0.831	0.806	2.783
	(2.30)	(-5.43)	(3.78)	(19.13)			
Feeding stuff for animals	8.505	-1.259	0.931	0.359	0.787	0.760	2.121
	(2.64)	(-4.58)	(2.70)	(3.97)			
Raw vegetable oil	10.763	-0.315	0.748	0.505	0.695	0.652	2.031
	(2.54)	(-0.59)	(1.55)	(3.77)			
Oil seeds	5.237	-0.886	1.584	0.216	0.643	0.590	2.072
	(1.66)	(-2.37)	(4.36)	(1.50)			
Sesame seeds	7.677	-1.888	0.715	0.214	0.817	0.793	2.196
	(2.84)	(-4.81)	(2.30)	(2.00)			
Rice	11.463	-1.687	0.431	0.415	0.883	0.868	1.711
	(3.04)	(-4.42)	(0.99)	(3.19)			
Maize	9.473	-1.576	0.863	-0.102	0.880	0.865	1.970
	(3.34)	(-9.84)	(2.58)	(0.91)			
Dry pulses	10.046	-1.696	0.605	0.257	0.761	0.729	2.083
	(2.85)	(-5.00)	(1.49)	(2.20)			

Source: Author's calculations based on data from Turkish Statistical Institute.
The numbers in parentheses are the t-statistics for the respective coefficients

The Durbin-Watson statistics were calculated because of the inclusion of the lagged dependent variable. Durbin-Watson is the appropriate measure to test for the existence of serial correlation. In all Durbin-Watson statistics value was calculated at more than 1.7. This value shows that there was no autocorrelation problem in the estimated models. The R-square (R^2) values were also calculated for each estimated model. These results show that what percentage of these variables can explain models.

Price elasticity of demand gives the percentage change in quantity demanded in response to a one percentage change in price. The more necessary a product is, the lower price elasticity of demand, as people tend to buy it no matter what the price is. For this reason, in agricultural products price elasticity of demand is inelastic. Income elasticity of demand measures the responsiveness of the demand for a good to change in the income of the people demanding the good, holding all prices constant.

Most of the products listed in Table 4.1 are raw materials of the industrial sector. After these products are processed by the industry, some amount is consumed domestically and the remaining some part is exported. In other words some are demanded by foreign consumers. The export of processed products that contain some agricultural raw material is increasing, especially since 2000. However, domestic production of cotton, bovine hides, oil seeds and raw vegetable oil does not meet the input demand of these industries. On the other hand, Virginia and Burley tobacco production (which is used in blended cigarettes) in Turkey is just starting at the moment. Because of these circumstances, in Turkey located foreign brand cigarette industries inevitably demand from abroad, so price elasticity of import demand is expected to be inelastic. Moreover, Turkey's pasta and wheat flour exports have been increasing steadily, too. Since the export quality requirements of flour and macaroni industry is quite high, Turkey has to import wheat. Other side, stock raising turn toward live stock fattening from pasture stock raising in last 20 years. However, Turkey's feeding stuff production is not sufficient to meet domestic demand. For this reason, import of residues of soybeans and other feeding stuffs is inevitable for Turkey and price elasticity of these products are expected to be inelastic, too. Consequently, low price elasticity is expected for almost all these agricultural raw material products.

For the import demand of agricultural products that can be consumed directly (or with little processing without losing the main characteristics), the impact of

relative prices should be stronger. So, price elasticities of import demand of these products are expected to be greater than price elasticity of import demand of raw products.

Results show that, the estimated coefficients of relative prices are statistically significant for the selected agricultural products except tobacco and raw vegetable oil. Regarding raw agricultural products, relative price has little impact on import demand of bovine hides and oil seeds. However, import demands of wheat, residues of soybean, feeding stuff for animals and cotton are found to be elastic to relative prices. Thus, these results are not in line with general expectations.

According to results of import demand models of consumption products, all selected products' (rice, dry pulses, maize and sesame seeds) import demands are price elastic. The range of these import price elasticities is from -1.576 to -1.888. So, results of these estimations are in line with expectations.

Income elasticities of agricultural products' are expected to be less than one. As shown in Table 4.1, per capita GDP is statistically significant for all selected raw agricultural products except raw vegetable oil. It is obvious that, residue of soybean is highly elastic to income. However, since residue of soybean is necessity product, result of the estimation is in contradiction with expectation. For the other raw materials, while import demands of oil seeds and wheat are found to be elastic to income, import demands of bovine hides, cotton, tobacco and feeding stuff for animals are found to be income inelastic. On the other hand, the role of per capita GDP for consumption products is only significant in determining the import demand of maize and sesame seeds .

All of these results indicate that, although econometric analysis has an indispensable importance to determine the effects of explanatory variables,

they may be misleading if the data is not properly prepared. A standard econometric analysis of the import demand might produce useful results if the products are consumed in the domestic market. Both price and income of the consumer have here an explanatory power, yet if the imports are just input demands for the exporting industries then a standard "import demand" econometric model might be misleading. Actually raw material imports of an exporting industry might be analyzed within an "export supply" model much better. Even a production function of the textile industry may handle such (import) input demand much more adequately than a standard import demand function. Exports might be explained much better by income of foreign households, international prices and substitutes.

If a general import demand function is estimated, the mixed data of all products, both consumption goods for the domestic market and raw materials of the export market, will weaken, if not distort the relationship between incomes, domestic prices and imports. This problem may be overcome, to some extent, by estimating an import demand function for each, only domestically, consumed agricultural product. Yet such data is not readily available. The analysis of the imports by estimating a proper import demand (or another more suitable) function for each agricultural product, even a separate one for its domestic and foreign market components require time and effort that exceeds the scope foreseen for this study.

Here a more practical, descriptive approach is preferred. A descriptive analysis is employed by the help of available agricultural production and foreign trade statistics. This approach gives a useful overview rather than precise estimated coefficients.

CHAPTER 5

**ALTERNATIVE CLASSIFICATIONS OF AGRICULTURAL
IMPORTS AND EXPORTS**

The sorting of agricultural exports and imports under various categories may serve for a better understanding of agricultural foreign trade. For example, agricultural products may be classified as raw materials and processed products separately. Trends towards more processed agricultural goods imports or exports or raw materials may give important insights for agricultural trade policy. Finding out about what percentage of agricultural products are imported as raw material and how much of them are processed and exported to the foreign markets may even be more important for Turkey's foreign trade policies.

Furthermore, when the agricultural import is analyzed, classification of agricultural products as food and non-food products may also produce useful information. Each category emphasizes a different trade policy aspect.

Another useful category is "agricultural products that cannot be grown in Turkey" due to climatic conditions. Their increase in imports depends heavily on tastes and population. Coffee and tropical spices are good examples of this category. However, cocoa imports imply something more. It is benefitted from "Inward Processing System" and chocolate has become an important export product of Turkey. Importing agricultural commodities that cannot be grown at home, processing and exporting them has been practiced since the industrial revolution; cotton, tea and coffee are just a few examples. Such an attempt in Turkey is quite recent.

5.1 Foreign Trade of Processed and Unprocessed Products

For the definitions of processed and unprocessed agricultural products, we used the GTIP classification according to which 41 groups are identified. The

subgroups that are analyzed in this study are classified at 6 digits. These subgroups and their shares are given in Table 5.1, and 5.2 but minor quantities are neglected[19].

Figure 5.1: Share of Unprocessed Import Products in Total Agricultural Imports and Processed Export Products in Total Agricultural Exports (by value)

■ % processed products exports in total agricultural exports
■ % unprocessed products imports in total agricultural imports
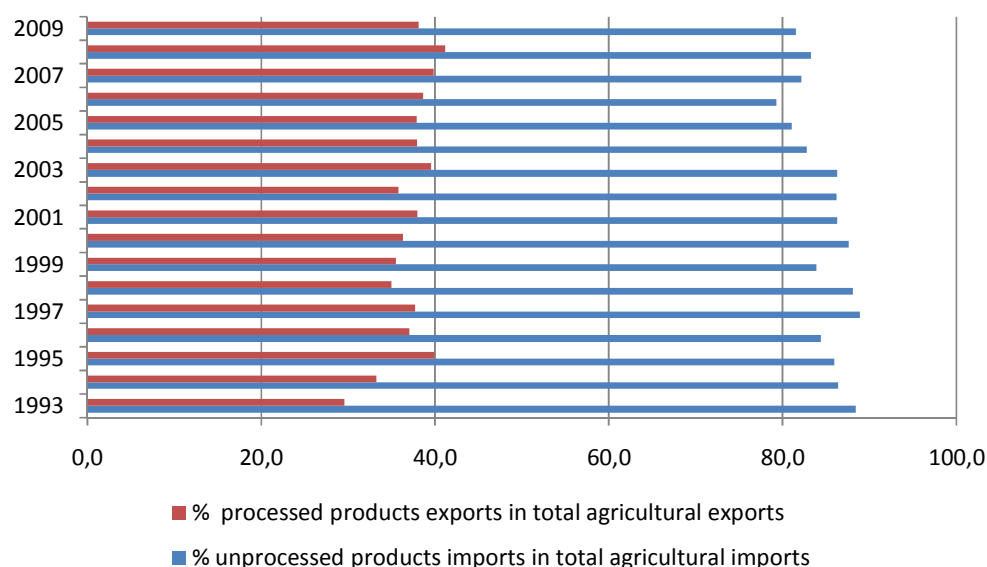
Source: Author's calculations based on the data from Turkish Statistical Institute.

As shown in Figure 5.1, unprocessed product imports add up almost to 85% of Turkey's total agricultural imports in the 1993-2009 period. This high percentage indicates already to the excess demand for the unprocessed commodities. However, in order to be explicit the analysis should be done in more detail. Because the share of unprocessed agricultural products exports is also much higher than exports of processed products.

An overall glimpse of foreign trade data indicates first that, imports and exports of these products started to increase since 2002. Second, the aggregates of unprocessed imports and exports have been always close to

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[19] Products of animal origin, unprocessed live plants, unprocessed dairy products, lacs, gums, resins, vegetable plaiting products, unprocessed skins, silk, textile bast fibres.

each other. Third, if the analysis is extended to subgroup categories, Turkey appears as a net exporter in some of the unprocessed agricultural products and net importer in some other categories for quite some time.

Figure 5.2: Foreign Trade of Unprocessed Agricultural Products of Turkey during 1993-2009 (USD million)
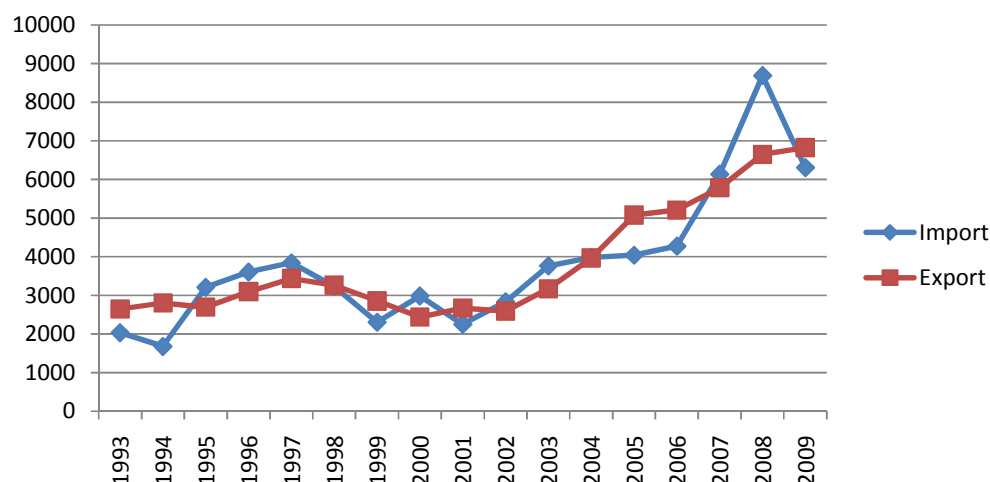
Source: Author's calculations based on the data from Turkish Statistical Institute.

In 1993, the value of the Turkish unprocessed agricultural products imports amounted to 2 billion US Dollars with a share of 88.4% in total agricultural imports and it increased to 6.2 billion US Dollars (81.5%) in 2009. At the beginning of the period, the most important unprocessed import products were raw hides, cereals, raw animal and vegetable oil and raw cotton.

However, this ranking changed in 2009. While the share of the raw hides, most imported unprocessed goods in 1993, dropped down to 4.7%, the share of the cereals increased to 19.1%. Similarly, the oil seeds group increased its share to 16.7% in unprocessed agricultural products and it was followed by cotton which has a share of 16%.

Table 5.1: Exports and Imports of Unprocessed Agricultural Products, 1993 and 2009 (by value)

	1993	2009	1993	2009
	% of import	% of import	% of export	% of export
Live animals	5.1	0.5	10.7	0.4
Meat and meat pre.	1.5	0.0	0.7	2.3
Fish and fish pre.	1.1	1.7	1.5	4.7
Vegetables	1.9	3.9	13.3	15.0
Fruits	2.6	5.0	34.6	44.0
Coffee, tea, spices	0.7	0.6	0.0	0.0
Cereals	16.8	19.1	4.2	3.0
Products of the milling industry	0.1	0.4	4.3	9.6
Oil seeds	4.9	16.7	1.6	2.3
Raw animal and vegetable oil	14.9	11.3	3.9	2.7
Sugar	0.1	0.6	0.1	0.5
Cocoa	1.0	3.7	0.0	1.0
Miscellaneous edible products	0.0	0.1	1.2	2.7
Residues/ wastes from food industry	4.6	7.4	0.1	0.3
Tobacco	4.7	5.7	14.9	7.2
Raw hides	21.5	4.7	1.0	1.4
Raw wool	3.9	0.4	0.1	0.2
Raw cotton	12.2	16.0	5.9	1.7

Source: Author's calculations based on the data from Turkish Statistical Institute.

According to unprocessed products export data, the value of exports was 2.6 billion US Dollars in 1993 and it increased to 6.8 billion US Dollars in 2009. It is apparent that, there was a great weight of fruits in unprocessed agricultural products, amounting to 917 million US Dollars in 1993 and 3 billion US Dollars in 2009. Although the value of raw tobacco increased 1.24 times (from 395 million US dollars to 491 million US dollars), the share of this product decreased 2.07 times (from 14.9% to 7.2%). At the same time, Turkey's live animals' exports decreased in 11.6 times (from 283 million US dollars to 24 million US dollars). Other leading unprocessed agricultural exports were vegetables (15%) and products of the milling industry (9.6%) in 2009.

All these observations indicate that, Turkey is a raw material importer and it is a net fruits and vegetables exporting country.

As shown in Figure 5.3, Turkey was a net processed agricultural products exporter in last 17 years. Turkey's processed agricultural products export value was 1.1 billion US Dollars in 1993 and it increased to 4.2 billion US Dollars in 2009. The volume of exported and imported processed agricultural products increased after 2002 much faster. However, exports have showed a higher rate of growth than imports.

Figure 5.3: Foreign Trade of Processed Agricultural Products of Turkey during 1993-2009 (USD million)
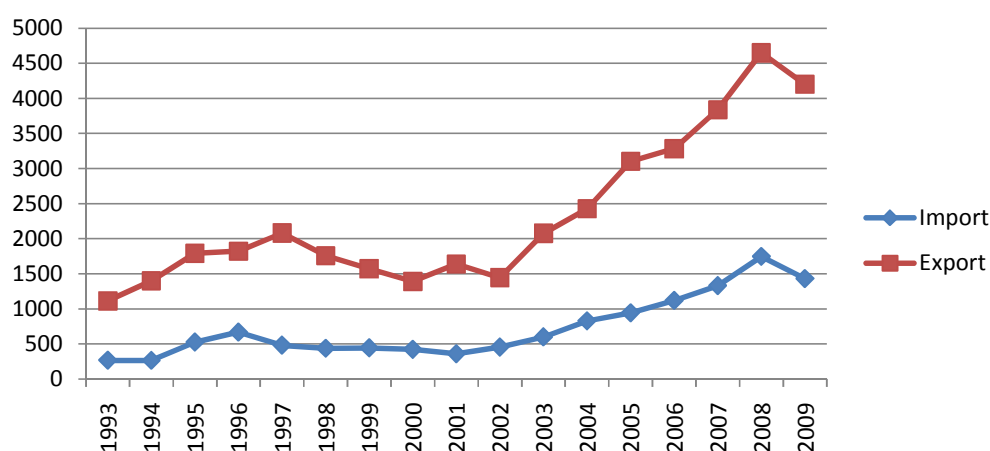
As it has already been mentioned, among Turkey's export of unprocessed agricultural products, fruits and vegetables take the first rank. Preparations of these products were also among top exports. This group amounted to 31% of processed agricultural exports on average between 1993 and 2009.

The share of sugar preparations and refined animal and vegetable oil in total processed agricultural products decreased 2.9 times (from 18.5% to 6.2%) and 1.9 times (from 15% to 7.8%). Furthermore, preparations of cereals, flour and starch ranked second with a share of 16.1% and it was followed by miscellaneous edible products with a share of 8.5% in total exports.

Table 5.2: Exports and Imports of Processed Agricultural Products, 1993 and 2009 (by value)

	1993	2009	1993	2009
	% of import	% of import	% of export	% of export
Dairy products	9.8	8.0	1.4	5.8
Live trees and other plants	0.1	0.0	1.0	0.6
Coffee, tea, spices	3.9	2.7	8.1	2.3
Products of the milling industry	0.0	0.6	0.1	0.3
Refined animal and vegetable oil	40.1	26.5	15.0	7.8
Preparations of meat	0.4	0.2	1.9	1.0
Sugar preparations	2.7	1.4	18.5	6.2
Cocoa preparations	2.5	5.0	3.3	7.1
Preparations of cereals, flour, starch etc.	4.3	10.3	7.6	16.1
Preparations of vegetables, fruits	2.2	3.8	32.6	30.4
Miscellaneous edible products	7.4	22.6	0.7	8.5
Beverages	4.4	9.0	2.2	4.3
Residues and wastes from food industry	6.1	6.3	0.0	1.1
Tobacco products	16.1	2.9	2.5	6.3
Skins	0.0	0.6	5.0	2.1

Source: Author's calculations based on the data from Turkish Statistical Institute.

In 1993, the value of the Turkish processed agricultural products imports was 266 million US Dollars and it increased to 1.4 billion US Dollars in 2009. Refined animal and vegetable oil were the leading product group among processed agricultural product imports with a significant share of 40.1% in 1993 and 26.5% in 2009.

The share of tobacco products in total processed agricultural imports decreased permanently. It was 16.1% in 1993 and dropped down to 2.9% in 2009. On the other hand, miscellaneous edible products[20] imports increased almost 16 times (from 19.9 million US Dollars to 329 million US Dollars) and ranked second in processed import agricultural products in 2009.

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[20] Main miscellaneous edible products are yeasts (active or inactive), extracts, essences and concentrates of coffee and preparations, other sauces and preparations therefore mixed condiments and protein substances

Preparations of cereals ranked third among imports. Flour and starch had a market share of 10.3 percent among processed agricultural products in 2009. It was followed by beverages, which accounted for 9% and dairy products at 8%.

Turkey's unprocessed agricultural products imports played a key role and these products should be analyzed in more detail for clarifying the reasons of this rapid rise in imports. The focus should be on raw material imports that were demanded by the manufacturing industry which were required for exports.

5.2 Raw Material Import Demand of the Export Sector

5.2.1 Raw Cotton

Apart from being the raw material of textile sector, cotton can be used in the oil and animal feed industry. Owing to its great usage area, cotton is a strategic product in the world. Turkey was a net raw cotton importer country during 1993-2009. Cotton imports ranked first, seven times during the last 17 years and have become Turkey's most important agricultural import product by value.

While raw cotton imports amounted to 248 million US Dollars with a share of 10.7% in total agricultural imports in 1993, it increased to nearly 1 billion US Dollars (13%) in 2009. However, Turkey's raw cotton exports were quite stable and amounted to 108 million US Dollars on average within the same period.

According to Turkish Statistical Institute's data (Turkstat 2010a), the cotton sown area in Turkey has been decreasing since 2002. In 2009, the cotton area decreased by 42% but productivity increased 16% compared to 2002. Although Turkey's cotton production amounted to 2.3 million tons on average

for the 1993-2007 period, it decreased in 2007 because of drought and it directly affected imports of cotton. With respect to the FAO data, while Turkey ranked seventh in total raw cotton production, it ranked second after China in total raw cotton imports of the world in 2007[21]. Considering raw cotton needs of the industry, increasing import demand is directly influenced by the limited domestic production. Important reasons for the increases in imports of cotton are the constraints on profitable domestic production.

Figure 5.4: Turkey's Raw Cotton Foreign Trade (USD million)
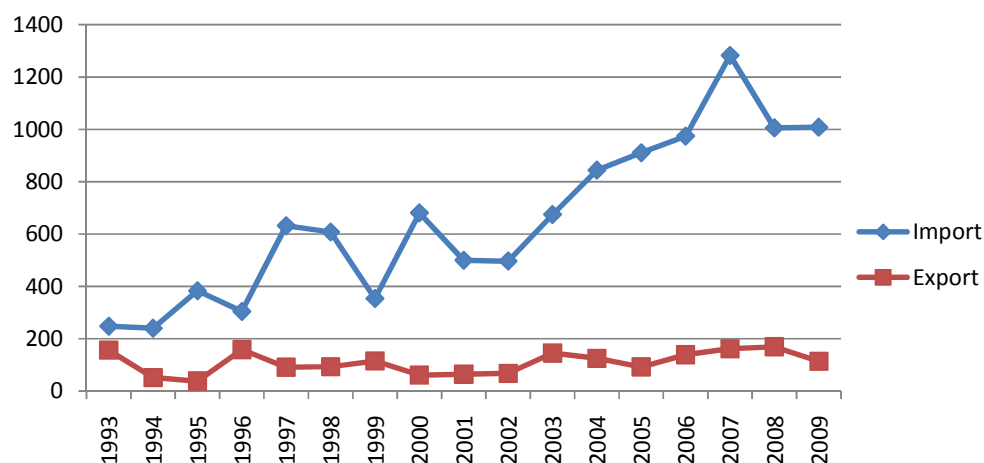
Cotton is the most important raw material of textile sector. In this respect, when raw cotton foreign trade data is analyzed, it is required to look at the "made of cotton" textile foreign trade data. According to the Undersecretariat of Foreign Trade's 2010 report (DTM, 2010a), while Turkey's exports has been improving parallel to foreign trade developments of the world, exports of clothing increased more rapidly than the world average. Turkey exported cotton textile up to 3.1 billion US Dollars in 1993 and it increased to 11 billion

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[21]See. http://faostat.fao.org/site/342/default.asp

US Dollars in 2008. Cotton textile sector[22], which has an important share in Turkey's total exports value, constituted 10.5% of total exports in 2008. Along with Turkey's cotton textile exports increases in 2000's, Turkey's raw cotton imports increased steadily.

Figure 5.5: Turkey's Cotton Textile Foreign Trade (USD million)
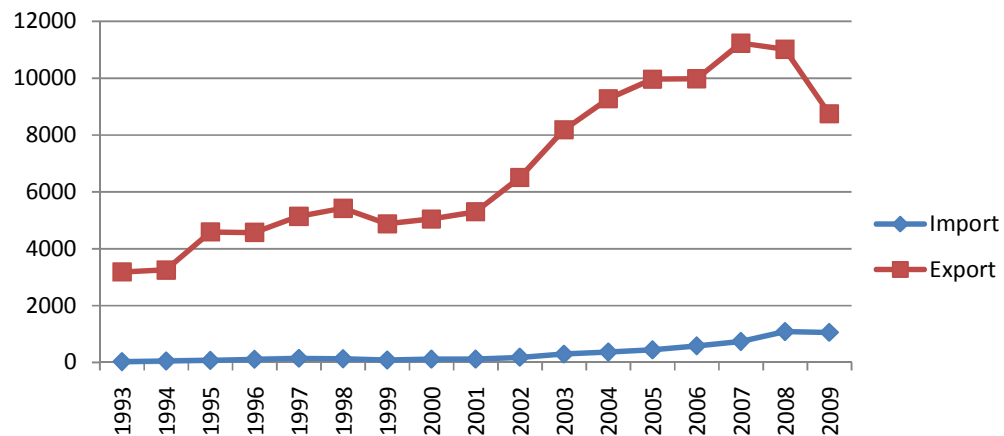
Being a net importer of a product and being self-sufficient are two different things or foreign trade deficit does not imply necessarily lack of self-sufficiency. For example in his study Akder (2003), argues as long as cotton imports are consumed for exports, Turkey may keep its self-sufficiency for cotton. As long as imported cotton is not used for domestic consumption, self sufficiency may be maintained. In order to evaluate domestic consumption, Akder suggests a simple formula: imported amount of raw cotton should be added to domestic raw cotton production and then exports (cotton content of textiles and raw cotton) should be subtracted from this number for approximating domestic consumption. Consequently, self sufficiency can be measured as a ratio of domestic consumption over domestic production. As long as the ratio is one or less than one, it would imply that self-sufficiency is maintained.

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[22] Cotton textile foreign trade data is calculated by author by selecting codes which contains only cotton in GTIP 58,60,61,62,63.

We analyzed Turkey's raw cotton self sufficiency and the ratio of the import demand of manufacturing sector to export for the period 1993-2009. Stock data on cotton is not available. So, stock changes are assumed here as zero. As shown in Table 5.4, Turkey's self sufficiency ratios of cotton are lower or equal to one. Consequently, for the period analyzed Turkey has been self sufficient in cotton although imports were increasing.

Table 5.3: Turkey's Cotton Imports by the Share of Selected Countries, 1993-2009

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
USA	15.2	7.9	24.9	7.0	27.9	37.1	11.7	32.8	41.4	53.6	60.0	57.8	61.7	54.7	64.0	61.9	52.2
Greece	9.8	15.5	29.1	23.7	14.3	34.0	22.3	22.1	22.4	19.0	20.0	20.0	18.8	22.1	9.6	14.5	24.5
Uzbekistan	10.6	28.0	10.6	11.5	11.5	12.3	10.1	5.5	2.4	1.4	0.2	1.8	1.4	2.9	3.4	3.2	2.7
Turkmenistan	27.9	24.8	26.5	27.4	7.6	3.1	7.1	9.0	7.7	6.2	4.2	4.9	1.7	5.5	5.6	4.3	6.9
Syria	4.5	7.0	5.6	4.1	6.1	10.7	5.9	10.5	7.4	5.3	8.1	4.5	7.6	4.8	4.8	0.7	1.3
India	0.4	0.4	0.0	0.0	1.8	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.3	1.5	9.3	4.1	3.2

Source: Author's calculations based on the data from Turkish Statistical Institute.

Turkey's average cotton production is approximately 2.3 million tons annually. Average cotton consumption is around 1.9 million tons. All these figures show that, Turkey imports raw cotton to meet the textile sector's raw material demand. So, it is expected that Turkey's import dependency index (IDI) has been increasing from 2000. It was 15% in 1993 and it increased to 44% in 2009. Moreover, the falling tendency in the raw cotton prices due to the support policies of the USA and the EU especially make import of cheap raw material for export products more appealing.

As shown in Table 5.3, there is a geographic concentration in the cotton imports. The first six countries add up almost to 89% of Turkey's raw material imports after 2000, in particular. Turkmenistan and Greece have been the most important countries from where Turkey imported raw cotton since 1997. USA has achieved the biggest share in the cotton import market of Turkey.

According to 2009 data, the USA and Greece constituted 76.7% of total raw cotton imports of Turkey.

Table 5.4: Turkey's Raw Cotton Balance Table (Tons)

Year	Raw Cotton Production	Raw Cotton Import	Raw Cotton Export	Cotton Textile Export	Cotton fiber and manufacture Export	Consumption	Self sufficiency (%)	IDI (%)
1993	1561441	200880	132355	183514	69741	1376711	0.88	0.15
1994	1619738	147059	27149	190761	149501	1399385	0.86	0.11
1995	2223507	182561	2918	243734	90610	2068805	0.93	0.09
1996	2082771	167580	76043	267022	98948	1808338	0.87	0.09
1997	2104946	356458	37040	328518	130745	1965102	0.93	0.18
1998	2304503	379688	45965	367285	186958	2083983	0.90	0.18
1999	2025867	277158	80394	366784	195803	1660044	0.82	0.17
2000	2260921	566784	27515	409409	171809	2218972	0.98	0.26
2001	2357892	454159	30043	448609	201370	2132029	0.90	0.21
2002	2541832	540563	37670	528378	180334	2336013	0.92	0.23
2003	2345734	556597	88835	593446	190069	2029981	0.87	0.27
2004	2455071	585108	47793	599234	214881	2178270	0.89	0.27
2005	2240000	775512	38274	629997	205532	2141709	0.96	0.36
2006	2550000	753715	62009	637352	234895	2369460	0.93	0.32
2007	2275000	946213	65738	655449	235095	2264932	1.00	0.42
2008	1820000	613435	58917	594128	230769	1549621	0.85	0.40
2009	1725000	753164	35737	520187	198718	1723522	1.00	0.44

Import Dependency Index (IDI) = Import/ Consumption

Source: Author's calculations based on the data from Turkish Statistical Institute.

5.2.2 Cereals

Owing to its great importance in nourishment, cereals are the most strategic product group in the world. A large quantity of cereals is consumed as raw material in the food industry. For this reason, the import volume of these products should be analyzed together with the foreign trade data of processed food products.

Figure 5.6: Turkey's Cereals Imports (USD million)
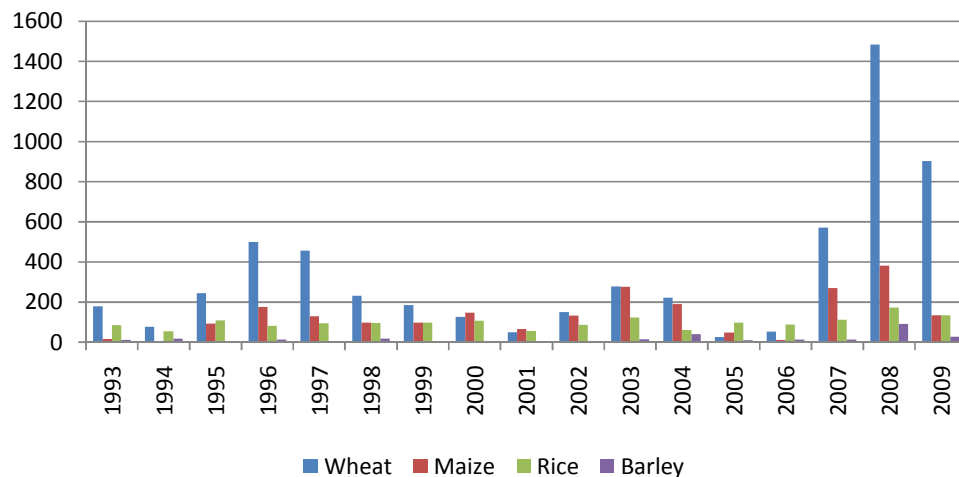
Source: Turkish Statistical Institute.

Cereals are among the top ranking agricultural imports of Turkey. They ranked first in 2008 (20.5%) and 2009 (15.5%). While wheat was at the top of the cereals imports of Turkey in the 1993-2009 period, the share of maize and rice in total cereal imports started to increase since 2000's. Turkey's wheat imports amounted to 1.48 billion US Dollars, maize and rice imports amounted to 382 million US Dollars and 173 million US Dollars in 2008. Yet, Turkey's cereal imports started to decrease in comparison to former years 1994 and 2001. At that time their share decreased by 55% and 54% respectively. Actually, in the years 1995 and 2002 the quantities imported continued to increase much rapidly compared to the former years. The simple growth rates were 193% and 109%. In both 1994 and 2001 there were strong devaluations of Turkish Lira. So, these developments may be

related to the change in exchange rates. However, as Turkey's food industry's production and export has increased continuously in the last 17 years, increasing "raw material demand" of this sector may be a more substantial factor for the increases in cereals imports.

Cereals have the largest area among field-crop products in Turkey. Cereals are grown on about 60% of the arable land. As shown in "Cereals Balance Table", the ratios of self sufficiency[23] in cereals were rather high even in drought years. Although falling in the production of wheat (20 million tons to 17.8 million tons) and barley (9.5 million tons to 5.9 million tons) in recent years, this ratio was high owing to decrease of these products' domestic use.

Table 5.5: Turkey's Cereals Balance Table (Thousand Tons)

	Wheat			Maize			Rice			Barley		
Year	**06/07**	**07/08**	**08/09**	**06/07**	**07/08**	**08/09**	**06/07**	**07/08**	**08'/09**	**06/07**	**07/08**	**08/09**
Production	20010	17234	17782	3811	3535	4274	417	388	451	9551	7306	5923
Supply=Use	20505	18797	20432	4836	4571	4605	581	621	631	9039	7067	5711
Usable Production	18909	16286	16804	3696	3429	4145	413	385	447	8977	6868	5567
Import	1596	2511	3628	1140	1142	459	168	236	184	61	199	144
Domestic Use	18943	16881	17781	4272	4211	5187	580	636	591	8915	7057	5675
Human con.	16490	14584	15458	1029	1026	1041	555	613	557	90	67	56
Seed Use	1457	1457	1456	14	14	15	11	11	20	685	685	590
Other	996	840	867	3229	3171	4131	14	12	14	8140	6305	5029
Export	2397	1819	2343	74	93	124	17	21	36	385	10	2
Self Sufficiency (%)	99.82	96.47	94.51	86.53	81.41	79.91	71.28	60.45	75.65	100.7	97.31	98.09
IDI (%)	8.8	14.8	5.6	23.9	25.5	10.2	29.8	39.3	30.9	0.7	2.8	2.5

Usable production= Production- Losses **Consumption**= Usable production+ Import-Export **Import Dependency Index (IDI)** = Import/ Consumption **Self sufficiency Ratio**= Usable Production/ Domestic use

Source: Turkish Statistical Institute (2010b).

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[23] Here, self sufficiency ratio is measured as a ratio of "usable production over domestic use" (inverse of the formula in Akder (2003)).

Parallel to cereal production decreases, imports of these products increased in recent years. The import dependency index (IDI) was 8.8% in the 2006/07 marketing year and it increased to 14.4% in the next year. However, IDI increases are more noticeable for maize and rice. Import dependency indexes for maize and rice were 25.5% and 30.9% in the 2007/08 marketing year. Although the amount of maize production was high, the import dependency index was also high because of the insufficiency to meet raw material demand of starch and sweetener production. For rice imports, the domestic production was not sufficient to meet the domestic consumption.

Cereals imports decreased in 2009 compared to former years. Moreover, IDI decreased along with new production increase in the same year. It was explained in the "Soil and Product Office" 2009 report; in spite of the measures taken, imports of wheat could not be reduced due to the low world price and existing wheat quality problems in some regions of Turkey. While the amount of cereal production ranges between 18-22 million tons annually in Turkey, it decreased to 17.2 million tons because of a drought in 2007. However, maize and rice production increased continuously. The most important reasons of these increases were area and yield increases. In 2009, while the rice planted area increased by 55%, yield increased by 7% compared to 1993. These ratios were 7% and 37% for maize in the same period.

Although Turkey's maize, rice and barley export quantities are low, wheat export quantities are as high as import quantities. Although there is exportable surplus, the most important reason of imports is the type and quality of wheat that is required for the pasta, macaroni industry. According to the FAO data, Turkey ranked eleventh in wheat production and it ranked second in flour exports in the world because of the high demand of Iraq, Libya and Indonesia in 2008[24].

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[24] See: http://faostat.fao.org/site/342/default.aspx

Since the signature of the Customs Union Agreement in 1996 between Turkey and the European Union via 1/95 Decree of Turkey-EC Association Council, Turkey has adopted various regulations in conformity with EC's regulations. One of the mentioned regulations is Turkey's "Export Incentive System" which was abolished and replaced by "Inward Processing Regime". The aim of the "Inward Processing System" is to enable the import of raw materials without customs duties to the exporters, on the condition that production benefiting from such imports is exported. It is obvious that, one of these raw materials is wheat. Since Turkish "wheat flour" and "macaroni" exporters started to benefit from this system, Turkey's exports of these processed products have increased parallel to wheat import increases.

Wheat flour was the most important export product in milling industry for the 1993-2009 period. While Turkey's wheat flour exports amounted to 75 million US Dollars in 1993, it increased to 581 million US Dollars in 2009. Iraq ranks first among the major importer countries of Turkish wheat flour with a share of nearly 40% annually. Although, Turkey's wheat flour exports decreased together with Iraq war in the 1997-2002 period, it started to increase after the war again.

Figure 5.7: Turkey's Wheat Flour Exports by quantity and by value (Thousand Tons–USD million)
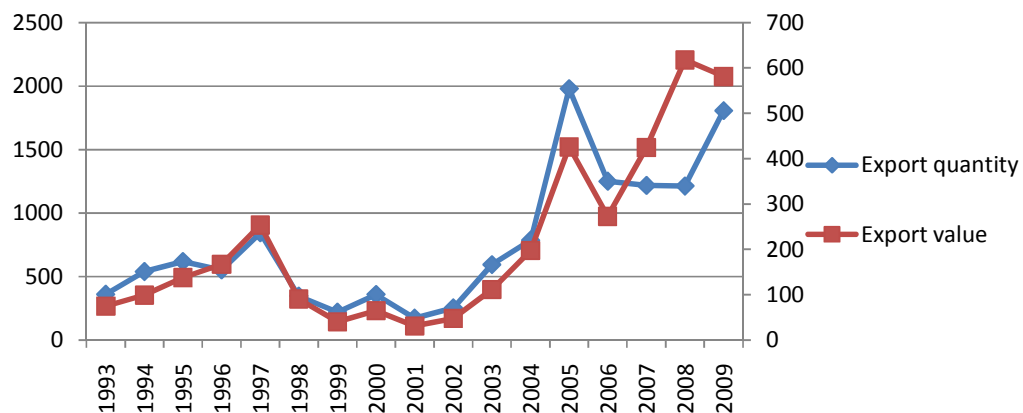
Source: Turkish Statistical Institute

After the disintegration of the Soviet Union, the Turkic Republics appeared as a new market for Turkish pasta-exporters. Moreover, the availability of durum wheat at world prices was an additional opportunity provided by Inward Processing Regime. Thus, Turkey's pasta exports increased permanently since 2000's. According to the FAO data, Turkey ranked second in total pasta exports in the world in 2008. Considering that wheat is the raw material of wheat flour and pasta, the rapid increase in exports has led to rapid imports of durum-wheat.

Figure 5.8: Turkey's Pasta Exports by quantity and value (Thousand Tons-USD million)
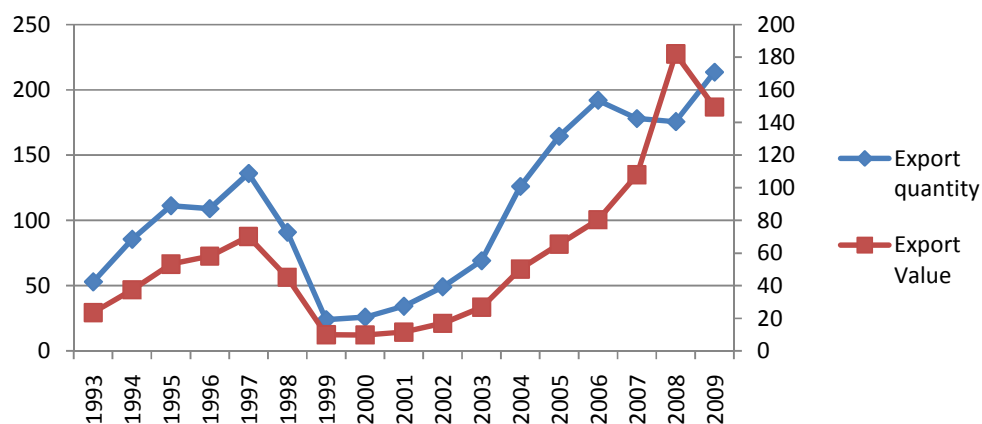
Source: Turkish Statistical Institute

5.2.3 Animal and Vegetable oil

The overall outlook reveals that, Turkey is a net importer of "raw animal and vegetable oil" and a net exporter of "processed vegetable oil". For vegetable oil, Turkey has an important production deficit. Except olive oil production, this deficit is closed by imports that amount to nearly 300-500 thousand tons annually.

The animal and vegetable oil group lead the agricultural imports with a share of 17.8% in 1993. It maintained its key role for the full period and ranked second with a share of 14.1% in 2009. Among the group of animal and vegetable oil, raw sun flower, palm, maize and soybean oil were important import products. Furthermore, their processed products were also important export products.

Figure 5.9: Turkey's Animal and Vegetable Oil Foreign Trade (USD million)
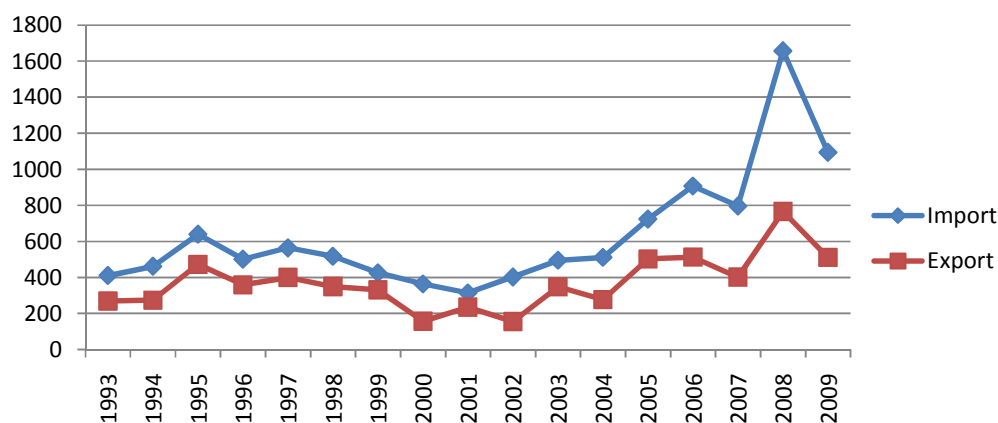
On average, for the period from 1993 to 2009, raw vegetable oil accounted for almost 75% of the whole animal and vegetable oil imports. On the other hand, raw olive oil is the Turkey's most important olive export product. The annual production of olives depends on climatic conditions and the alternate bearing nature of the olive tree, which yields one-year high/one-year low amounts (periodicity). Production may vary about 70% due to this periodicity. Accordingly, oil exports show a fluctuating trend. Thus, although Turkey's refined vegetable oil exports have been increasing permanently, the share of these products also fluctuate.

Turkey imports oil seeds and raw oil but processes some of it for exports. As can be seen from Figure 5.10, while Turkey was a net raw sunflower oil

importer, it was net processed sunflower oil exporter. Nearly 43% of total Turkey's animal and vegetable oil imports was raw sunflower oil which corresponded to 468 million US Dollars in 2009. As for refined sunflower oil, while it accounted for 9% in total animal and vegetable oil exports which corresponded to 25 million US Dollars in 1993, this share increased to 22% (111 million US Dollars) in 2009.

Figure 5.10: Turkey's Sunflower Oil Foreign Trade (USD million)

Raw Sunflower oil Import ——— Refined Sunflower oil Export
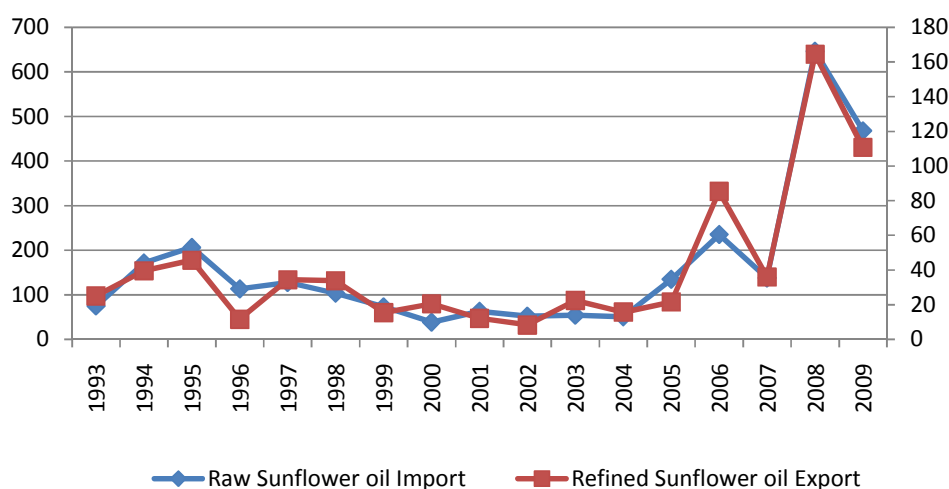
Source: Turkish Statistical Institute

The demand of sunflower oil has been increasing together with population increases and additional raw materials were required by the refined oil exporting sector. Such increases were not met by domestic sunflower production as the area suitable for sunflowers are quite limited. For this reason, Turkey's import dependence of sunflower seeds and sunflower oil is permanent. According to the Turkish Statistical Institute's data (2010c), while there was a 13% decrease in raw sunflower oil production compared to the former year, raw sunflower oil imports increased with a share of 79% in 2008. Such an increment in the imports cannot be explained only by production decrease because as it can be seen from Figure 5.10, processed sunflower oil exports increased with a share of 78% compared to the former year in the same period. All these developments indicate that a significant share of

sunflower oil imports increased due to the input demand of the refined sunflower oil exporting industry. The situation for maize, soybean and cotton oil is similar. Besides these products, palm oil, which cannot be produced in Turkey, had a substantial place with an average share of 25% in the animal and vegetable oil imports for the 1993-2009 period. Owing to its increasing use in the soap and shampoo production, these industries continue to demand palm as an input for their production.

5.2.4 Raw Hides

Raw hides had a central share in Turkey's agricultural imports for the 1993-2007 period. While the share of raw hides imports in total agricultural imports diminished from 19% to 3.8% between 1993 and 2009, the share of raw hides exports in total agricultural exports increased from 0.4% to 0.8%.

In particular, sheep-skins and lamb-skins, which are the most important raw materials of leather textile sector, have dominant in raw hides' imports. While Turkey's raw sheep-skins and lamb-skins imports amounted to 180 million US Dollars (49%) in 1993, it decreased to 89 million US Dollars (30%) in 2009. The average share of raw hides of bovine animals' imports in total imports of raw hides was 10.6% in the 1993-2009 period. As for raw hides groups exports, it was constituted by tanned or returned hides.

Figure 5.11: Turkey's Raw Hides Foreign Trade (USD million)
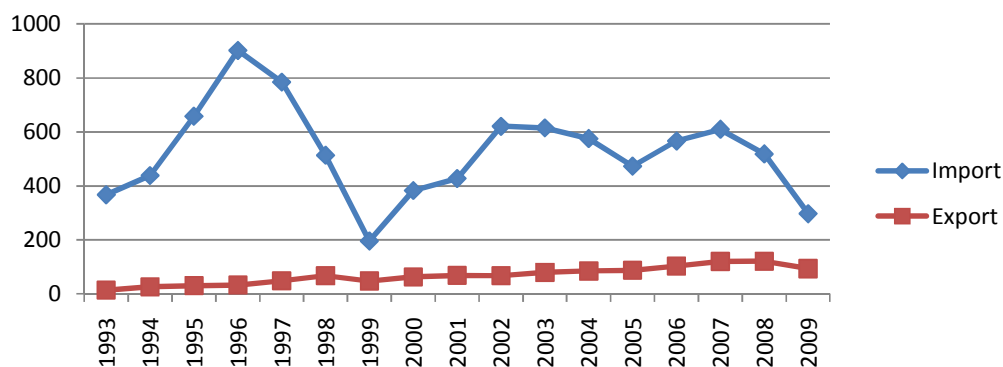
A slaughtered butchery animal gives three products: 70% meat, 20% viscera, 10% hide of its value. In other words, hide is a very small portion of an animal but it is the most important ingredient of raw hide production and the developments in the animal stock affects import demand directly. In the 1993-1997 period, owing to rising problems in stock raising, but the availability of low cost, high quality raw material imports of hide were boosted.

Figure 5.12: Turkey's Raw Hides Production (Thousand units)
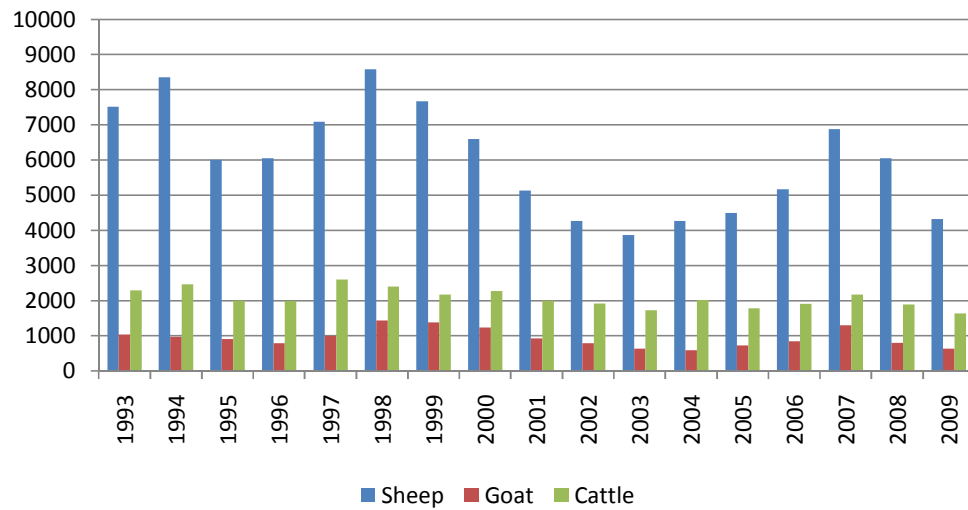
The incentive for leather textile sector came from export increases towards West European countries during the 1980's and the opening of trade with Eastern Block countries during the 1990's. Depending on the exports to Russian and Eastern Block tourists, the raw hide imports increased rapidly in 1996. Firstly 1998 Asian crisis, then 1999 Russian crisis, the hide clothing trade was affected dramatically[25]. These crises along with Marmara Earthquake in 1999 caused a huge decrease in imports of raw hides. Imports diminished by 62% compared to the former year. From 2000 onwards, import

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[25] See Özçörekçi and Öngüt, Dünyada ve Türkiye'de Deri ve Deri Ürünleri Sanayinin Gelişme Eğilimleri ve Geleceği, DPT, (2005)

demand was refreshed by new economic programs but the 2008 economic crisis caused another import decrease. These developments in leather textile industry affected raw material demand and so the imports of raw hides.

Raw hides are the major raw material of hide ready-made clothing, shoes, bag, upholstering, harness, glue and gelatin sectors. Turkey's competitiveness and production capacity was strong in sheep and goat hides processing. Turkey was a net hide-furniture exporter country until 2007. However, the export value of Turkey's hide furniture, decreased from 473 million US Dollars to 350 million US Dollars between 1993 and 2009. On the other hand, according to the State Planning Organization's data (DPT, 2010), leather and fur clothing production did not change significantly for the 1998-2006 period. The biggest part of this production was exported by Turkey and as it can be seen from the Figure 5.13 export value also did not change greatly for this period.

While Turkey's hide furniture exports increased, the raw material demand of these sectors increased, too. Although raw hides production amounted to 10 million units on average until 2001, it decreased to 6-7 million units on average, except in the year 2007. Sheep, goat and cattle hide production has diminished by 43%, 39% and 28% respectively in last 17 years. Owing to insufficiency of domestic raw hide supply, the deficit demand was met by the import. In particular, the decline in sheep production, which constituted almost 66% of raw hide production, affected raw hide imports.

Figure 5.13: Turkey's Hide Furniture Foreign Trade (USD million)
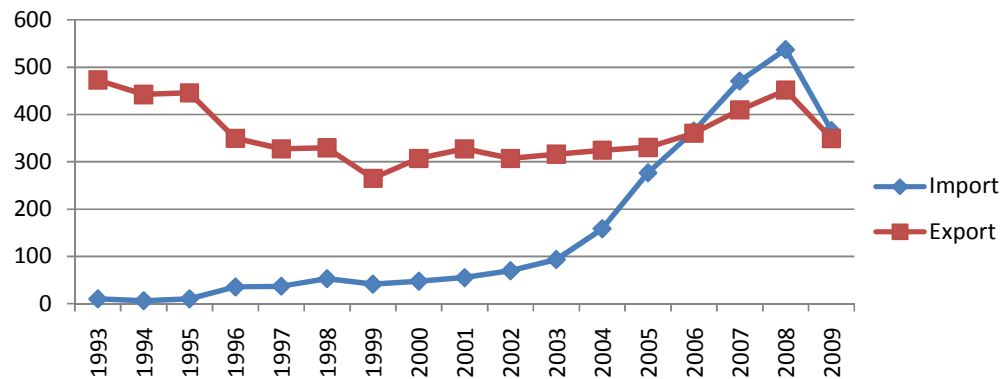
Furthermore, Turkey's hide furniture imports started to increase in 2002 and amounted 366 million US Dollars in 2009. The most important reason for this rapid increase in Turkey's hide furniture imports was China's cheap leather clothing exports. Recently, China together with Hong Kong, India and Pakistan became the leading cheap leather clothing producers of the world. In addition to very low wages, great state-support is available to producers in these countries[26]. The share of China in Turkey's hides furniture imports increased by 5.3 times between 1993 and 2008.

Table 5.6: Share of Countries in Total Hide Furniture Imports and Exports of Turkey, 1993 and 2009

% of Import				% of Export			
	1993		2009		1993		2009
Germany	24.0	China	46.6	Germany	50.4	Germany	16.8
Italy	14.7	Pakistan	22.4	France	15.3	Italy	16.1
China	11.6	Italy	10.9	Russian Fed.	6.2	Spain	11.1
South Korea	9.0	India	6.8	Austria	3.2	Russian Fed.	7.8
Bel-Lux	7.9	France	3.3	Bel-Lux	3.2	France	7.5

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[26] See, Deri ve Deri Mamulleri Sanayi Özel İhtisas Komisyon Raporu, Sekizinci Beş Yıllık Kalkınma Planı DPT, (2000) and Deri ve Deri Mamulleri Sanayi, IGM, (2010)

5.3 Foreign Trade of "Food" versus "Non-Food" Products

For the definition of food and non-food products, we followed the definitions of State Institute of Statistics of Republic of Turkey at 6 digits of GTIP classification. The aggregate outlook of the Turkey's agricultural food trade for the 1993-2009 period show that, Turkey was a net exporter country in food products foreign trade. Turkey's food products' export and import value started to increase in 2002 rapidly. In addition, food products' exports have showed a higher rate of growth than imports. With respect to exports, while food products had a 68.3% share in total agricultural exports of Turkey in 1993, this figure increased to 83% in 2009.

Figure 5.14: Foreign Trade of Food Products of Turkey for 1993-2009 (USD million)
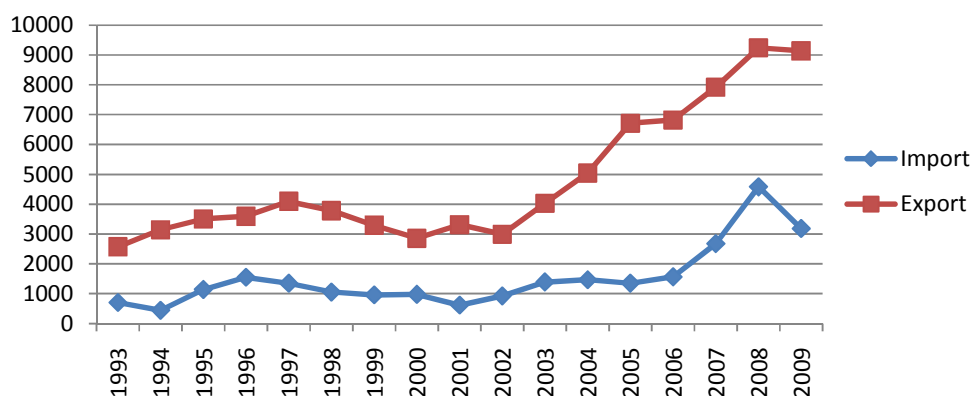
Source: Author's calculations based on the data from Turkish Statistical Institute

Important export commodities among Turkish food products are fruits, vegetables and preparations of them. In 2009, they together constituted almost 58% of Turkey's total food product exports. Preparations of cereals, flour, starch etc. and products of the milling industry were the other major products with high shares in Turkey's total food product exports in recent years. While sugar preparations' export value has increased from 2002 (170 million US Dollars) to 2009 (260 million US Dollars), the group of sugar

preparations' share in total food exports has been decreasing since 2002. As shown in Table 5.8, there is a dominance of cereals in food imports of Turkey. The cereal group had a share of 37.7% in food imports in 2009. It was followed by animal and vegetable oil and miscellaneous edible products with shares of 11.9% and 10.2% respectively. Meat and meat preparations and sugar preparations, which were negligible in food imports after 1996, constituted 23.7% of total food imports in 1995.

Table 5.7: Share of Food Products Exports of Turkey, 1993-2009

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Vegetables	13.7	10.8	10.8	13.3	12.0	10.4	8.3	9.2	11.3	10.8	11.7	9.6	7.9	10.4	10.9	10.3	11.2
Fruits	35.7	35.5	35.2	31.7	32.0	34.2	37.8	36.1	36.3	39.9	34.6	37.7	37.3	35.0	33.7	30.9	32.9
Cereals	4.3	4.8	2.1	0.8	1.9	7.6	6.8	7.9	4.9	2.7	1.4	0.3	1.7	2.9	0.8	0.4	2.2
Products of the milling industry	4.5	5.0	5.0	6.0	7.6	3.7	2.5	3.6	1.9	2.6	3.5	4.7	7.2	4.7	6.4	7.7	7.3
Animal and veg. oils	6.5	5.4	9.6	6.8	6.7	6.3	8.2	4.2	6.4	2.7	7.7	3.9	5.7	5.6	4.0	5.1	3.6
Sugar pre.	8.0	9.7	5.4	5.5	6.1	5.6	6.0	7.8	9.7	4.5	4.2	3.9	2.7	3.7	3.3	3.2	2.8
Pre. of cereals, flour, starch	3.3	3.8	6.6	8.4	7.3	5.2	3.2	4.0	4.0	5.5	5.9	6.0	5.2	5.9	6.7	7.7	7.4
Pre. of vegetable, fruits	14.1	15.8	15.1	15.7	15.1	16.4	17.3	17.0	15.9	17.3	16.7	19.4	19.1	16.4	16.6	15.6	14.0

Source: Author's calculations based on the data from Turkish Statistical Institute.

Table 5.8: Share of Food Products Imports of Turkey, 1993-2009

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Meat and meat pre.	4.4	2.2	6.8	1.6	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Fish and fish pre.	3.3	5.7	3.1	2.2	3.8	3.9	3.1	3.8	1.9	2.0	2.3	3.7	5.1	5.3	3.6	2.6	3.3
Vegetables	5.7	2.6	2.4	1.4	6.9	8.6	5.9	10.2	11.5	5.6	2.2	2.3	5.8	6.1	4.6	8.7	7.7
Fruits	7.6	6.8	4.2	3.9	4.4	6.0	7.8	7.0	5.0	7.0	5.8	6.8	11.4	12.1	9.4	7.0	9.8
Cereals	48.9	35.4	39.9	50.0	52.0	44.3	42.0	40.1	29.2	40.7	50.1	35.6	14.0	10.7	36.3	46.6	37.7
Animal and veg. oils	15.3	27.8	14.7	10.0	14.2	14.0	16.1	12.3	17.1	15.2	14.9	17.5	18.8	18.5	13.1	12.9	11.9
Sugar pre.	1.0	0.4	16.9	16.1	2.4	0.7	1.1	0.9	0.8	0.4	0.3	0.3	0.6	0.7	0.4	0.5	0.6
Mis. edible products	2.8	4.3	3.1	4.6	6.0	8.1	9.7	10.7	15.7	14.1	11.1	15.3	20.2	20.9	13.4	8.3	10.2

Source: Author's calculations based on the data from Turkish Statistical Institute.

Concerning "non-food products" trade for the 1993-2009 period, Turkey was a net importer country. Turkey's non-food agricultural export and import volume started to increase from 2002 rapidly. However, in contrast to the "food products", imports of Turkey's non-food products have shown a higher growth rate than exports. While "non-food" products had a 71% share in total agricultural imports of Turkey in 1993, it decreased to 58.8% in 2009.

Figure 5.15: Foreign Trade of Non-Food Products of Turkey for 1993-2009 (USD million)
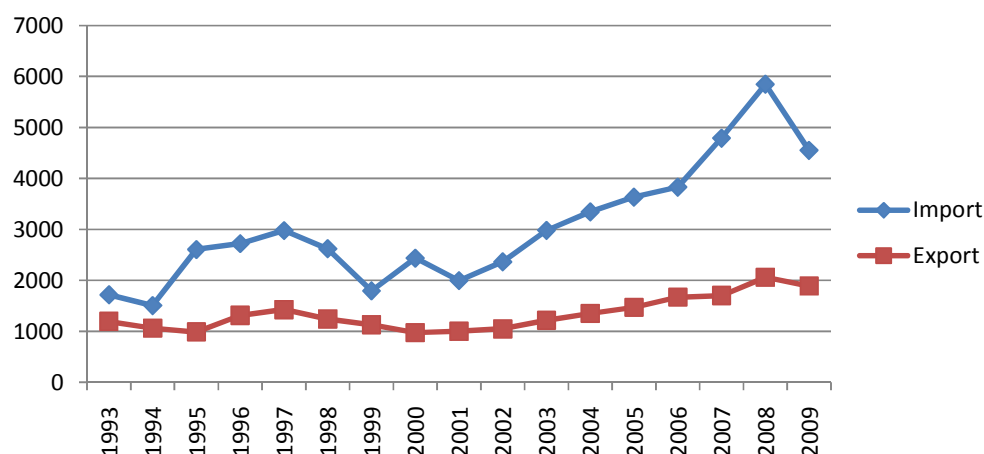
Turkey's non-food agricultural imports amounted to 1.7 billion US Dollars in 1993 and it increased to 4.5 billion US Dollars in 2009. Hides and cotton, which are the raw materials of the textile sector, were the most important non-food import items. The volume of hides and cotton imports were 1.3 billion US Dollars in 2009. However, oil seeds ranked first in total non-food products imports in terms of value in last two years. Other principal non-food products subject to imports are animal and vegetable oil and tobacco. In 2009, animal and vegetable oil imports reached 715 million US Dollars and tobacco imports reached 400 million US Dollars.

The most important export commodity among Turkish non-food agricultural products has been tobacco during the last 17 years. In 2009, tobacco accounted for 40% of the total value of raw agricultural exports, which corresponds to 757 million US Dollars.

Table 5.9: Share of Non-Food Products Imports of Turkey, 1993-2009

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Live animals	6.0	1.5	13.2	6.2	0.6	1.0	1.3	1.4	1.1	0.7	0.4	0.3	0.4	0.4	0.5	0.7	0.7
Oil seeds	5.8	6.6	9.1	10.3	9.9	13.5	14.7	11.4	8.2	11.3	16.1	15.9	19.2	16.1	21.3	25.0	23.2
Animal and vegetable oil	17.6	22.5	18.1	12.7	12.5	14.1	15.1	10.0	10.5	11.1	9.7	7.6	12.9	16.1	9.3	18.2	15.7
Residues and waste from food industry	6.4	5.6	3.9	5.5	6.2	6.0	9.8	8.5	6.8	6.1	6.7	12.0	9.4	8.3	11.4	13.2	12.2
Tobacco and tobacco pro.	19.0	9.3	6.1	10.2	12.9	11.7	16.3	14.4	14.2	8.8	7.9	7.2	7.6	6.7	6.3	6.7	8.8
Raw hides	21.3	29.1	25.3	33.1	26.4	19.6	10.9	15.7	21.4	26.2	20.6	17.2	13.0	14.8	12.7	8.9	6.5
Cotton	14.4	15.9	14.7	11.2	21.2	23.2	19.7	27.9	25.0	21.0	22.6	25.2	25.1	25.4	26.8	17.2	22.1

Source: Author's calculations based on the data from Turkish Statistical Institute.

Table 5.10: Share of Non-Food Products Exports of Turkey, 1993-2009

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Live animals	23.7	21.0	13.3	6.5	5.8	3.8	1.0	0.2	4.4	3.0	0.7	0.5	0.4	0.5	0.4	0.6	1.3
Oil seeds	3.6	4.8	6.9	4.0	3.8	5.0	5.4	4.4	5.4	4.9	6.0	5.9	6.6	6.9	7.6	7.3	8.2
Animal and vegetable oil	8.6	9.8	13.9	8.8	8.8	9.1	5.5	3.8	2.2	7.3	2.9	5.9	8.2	7.7	5.2	14.5	9.6
Miscellaneous edible pre.	2.6	4.0	4.5	5.3	6.3	7.1	6.3	8.3	7.8	8.8	7.7	8.0	7.6	7.2	7.6	7.1	9.7
Tobacco and tobacco pro.	36.9	39.8	38.6	48.5	47.9	47.4	49.7	50.3	43.5	36.7	34.4	35.4	40.1	41.0	37.8	34.2	40.0
Raw skins	5.0	6.0	6.8	4.1	9.7	6.4	7.6	8.5	10.0	13.2	13.1	11.0	10.6	10.9	10.1	6.8	5.5
Cotton	13.1	4.8	3.8	12.0	6.4	7.4	10.1	6.2	6.4	6.4	11.9	9.2	6.2	8.3	9.5	8.2	6.0

Source: Author's calculations based on the data from Turkish Statistical Institute

Live animals ranked second in total non-food products exports in the 1993-1995 period. While the share of live animals' exports started to decrease, share of raw skins and miscellaneous edible preparations exports started to increase during the same period. However, Turkey's raw skins export volume has decreased from 2006 (182 million US Dollars) to 2009 (104 million US Dollars). Miscellaneous edible preparations accounted for 9.7% of the total value of raw products exports, following animal and vegetable oil (9.6%) and oil seeds (8.2%) in 2009.

5.4 Imports of Agricultural Products that cannot be grown in Turkey

Among Turkey's agricultural imports, there are some products that cannot be grown in Turkey, due to climatic requirements. As long as the domestic demand for these products increases, imports will continue to increase. According to the Turkish Statistical Institute's data, the products that cannot be grown in Turkey are: cocoa, coffee, black pepper, coconut, pineapples, mango, cashew nuts, palm oil and coconut oil. Apart from these, although banana and avocado can be grown in Turkey, their domestic production quantities are very low. Thus, banana and avocado will be analyzed in this title, too. The share of these products in Turkey's agricultural imports was 13.2% in 1993 and it increased to 17% in 2009. The reasons of this increase differ from other agricultural products. The developments here may be analyzed in more detail.

5.4.1 Coffee

The value of coffee imports in total agricultural imports increased from 16.8 million US Dollars to 44.2 million US Dollars between 1993 and 2009. Coffee, not roasted, not decaffeinated was the most imported product (almost 82%) within the total coffee imports. On the other hand, coffee exports are negligible. Coffee trees grow best in tropic regions. Brazil, Ivory Coast, Indonesia and Mexico are the most ideal countries for coffee production.

Although some experiments were implemented to produce coffee in Turkey, they all failed. Consequently, coffee demand is covered exclusively by imports.

Figure 5.16: Turkey's Coffee Imports by quantity and by value (Thousand Tons-USD million)
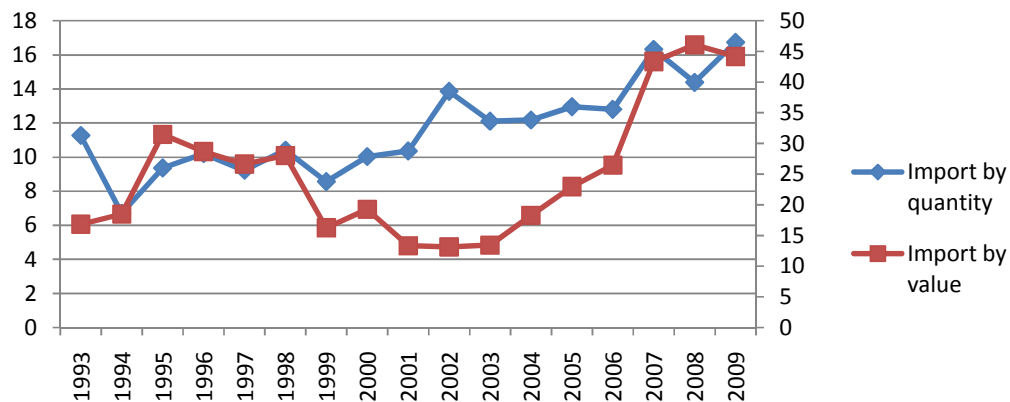
In coffee consumption, Turkey always stays behind compared to the European countries. While per capita coffee consumption is 5-6 kilos annually in the EU, it is 250 grams in Turkey. Because of coffee is accepted a luxury good in Turkey, demand changes according to income distribution. Due to opening coffee chains like Gloria Jeans, Starbucks and Café Crown, the European culture has become widespread and coffee demand has increased in Turkey. As it can be seen from Figure 5.16, in order to meet this demand, coffee imports increased from 2000, permanently. While per capita coffee consumption was 156 grams in 1993, it increased to 250 grams in 2009. Brazil and the European Union countries were the major coffee import sources of Turkey. Actually, coffee cannot be produced in the EU due to climatic conditions; Germany, Italy and France are major coffee importers in the world[27]. Africa and South American countries are the biggest coffee

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[27] According to FAO 2008 data, Germany ranks second, Italy ranks third and France ranks seventh in total coffee import.

exporter countries in the world, Turkey's coffee imports from the EU countries is a just re-export with minor processing.

5.4.2 Cocoa

Because of climatic conditions, cocoa also cannot be grown in Turkey, too. Yet, cocoa is an important raw material for chocolate and biscuit sector and the Turkish Food Industry imports this commodity. Together with the chocolate and biscuit industry investments in Turkey, raw material imports have increased from 11 million US Dollars in 1993 to 172 million US Dollars in 2009.

According to the FAO data, the biggest cocoa bean importers of the world are also the biggest food products containing cocoa exporters. Like Turkey, the European countries cannot produce cocoa. However, "Inward Processing System" is the most widespread application in the European Union which provides exporters cheap raw material. In particular, Germany, Holland and France import cocoa beans from African and South American countries and export processed products that contain cocoa. According to the FAO statistics, the EU countries (69%) were first among the major chocolate exporter countries and Turkey's share was just 1.9% in 2008.

Table: 5.11 Turkey's Chocolate and Food Preparations Containing Cocoa Production (Thousand Tons and USD million)

Year	2005	2006	2007	2008
Quantity	249.7	260.0	273.8	342.8
Value	1235.7	1294.8	1334.6	1793.4

Source: Turkish Statistical Institute (2010e).

As shown in Table 5.11, Turkey's chocolate and food preparations containing cocoa production increased by almost 1.4 times by quantity and value between 2005 and 2008. Moreover, an important part (almost 1/3) of this production is exported by Turkey.

Figure 5.17: Turkey's Cocoa Imports by quantity and by value (Thousand Tons-USD million)
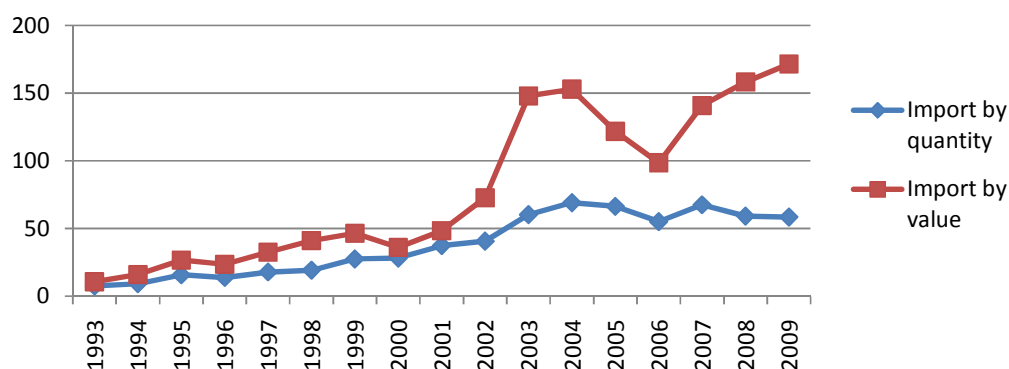
As has already been mentioned, Inward Processing Regime, which has been implemented by Turkey from 1996 onwards, provides customs exemptions to products which cannot be grown or whose production is insufficient in Turkey, IPR is an encouragement to provide raw material with world prices to exporters subject to only use in export products. This application ensures great advantages to Turkish chocolate and other food preparations exporters. As it can be seen from the Figure 5.18, Turkey's exports of these products increased and reached a peak in 2008, with 356 million US Dollars.

Figure 5.18: Turkey's Chocolate and other Food Preparations Containing Cocoa Foreign Trade (USD million)
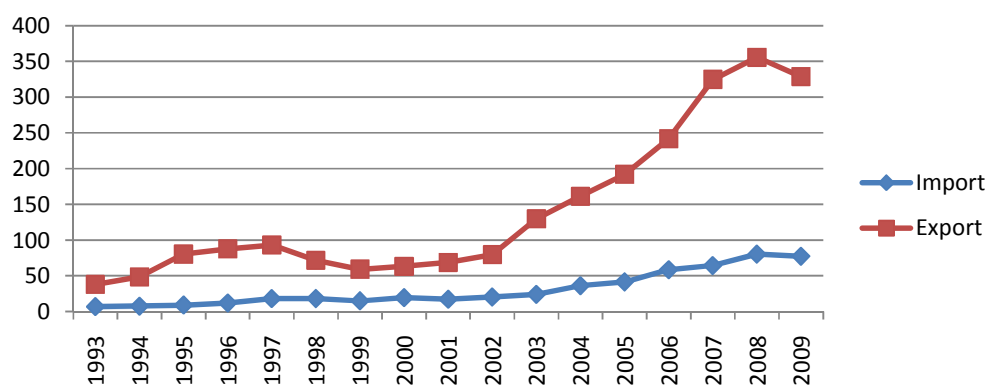
5.4.3 Black Pepper

The availability of diverse ecological conditions has resulted in growing many kinds of spices in Turkey. According to the FAO statistics, while Turkey ranks third after India and Bangladesh in spices production, it ranked fifth in spice exports in the world in 2008. However, black pepper is a spice which cannot be grown in Turkey and domestic demand is met by imports.

Figure 5.19: Turkey's Black Peeper Foreign Trade (Thousand Dollars)
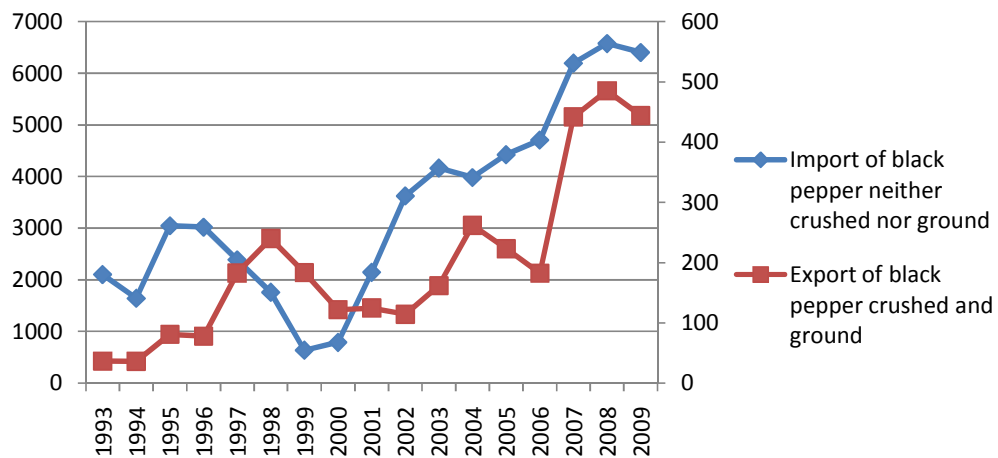
Source: Turkish Statistical Institute

While Turkey's black pepper imports amounted to 2.1 million US Dollars in 1993, it increased to 6.4 million US Dollars in 2009. Turkey imports black pepper "neither crushed nor ground" and exports processed, i.e. grounded black-pepper. Since export value of this processed product is too little, it is understood that the biggest part of the imports consumed domestically.

5.4.4 Fruits that cannot be grown in Turkey

Bananas have the largest share among the "imported fruit group" by value. Banana imports constituted 78% of total fruit imports in 1993. Its share decreased to 27% because of increases in other fruit imports. Actually banana can be grown in Mediterranean-Turkey but its qualities are quite different from the imported ones and the quantity of domestic production is small and far from meeting the domestic demand. Turkey's banana imports increased from 42 million US Dollars to 84 million US Dollars between 1993 and 2009.

Table 5.12: Imports of Fruits that cannot be grown in Turkey, 1993 and 2009 by quantity (Kg.)

	import quantity in 1993	import quantity in 2009
Banana	155.368.273	182.437.862
Coconut	2.568.349	10.227.959
Date	970.704	10.398.343
Pineapples	144.907	5.152.723
Avocado	10.459	117.917
Mango	6.415	182.955
Cashew nuts	0	2.196.998

Source: Turkish Statistical Institute.

Moreover, Turkey's pineapple, avocado, mango, date, coconut and cashew nuts imports increased in recent years. While date imports increased from 595 thousand US Dollars to 9.6 million US Dollars, pineapples imports increased from 3.1 million US Dollars to 7 million US Dollars and mango imports increased from 7 thousand US Dollars to 186 thousand US Dollars between 1993 and 2009. The most obvious reason of such an increase in these products imports value is liberalization in foreign trade after 2000's.

CHAPTER 6

OTHER FACTORS THAT GIVE RISE TO
AGRICULTURAL IMPORTS

The rapid increase in agricultural imports may be associated with changes in some macroeconomic variables. The most important ones are population increase, economic growth and exchange rate. In Turkey, population growth rate is decreasing. However, it may be considered still as high because the demand for basics, that is for food and clothing is increasing. If agricultural production or productivity increases cannot meet the needs of the additional population, this will lead to a decrease in net exports and/or to an increase in net imports. For the analysis of effects of population increase per capita consumption and its changes, there is a lot to be said.

Second variable is income or growth. The growth in income is an important factor that may explain the increasing demand for food. Turkey is considered normally as a self sufficient country. However, the diet is unbalanced. With the rise in income, demand may increase considerable for various products, but, especially for animal products.

Third variable is the price of food i.e. - If Turkish Lira was overvalued for long periods after 1990's, the overvalued exchange rate might be seen as a stimulant for imports. We will specifically look at the years of devaluation 1994 and 2001 and try to compare traded quantities and prices before and after the devaluation. In this chapter, these explanatory variables of the import demand will be described by the available trade and production statistics. The aim is to describe the picture of agricultural trade correctly.

6.1 Population

Population is surely an important explanatory variable. Population growth rate has been decreasing in recent years. However, it was still over 1.1% in 2009 and causes an increase in the demand for basic needs that is for food and textiles. Apart from population growth, changes in the age structure and migration from rural to urban centers have an effect on the diversity and quantity of agricultural imports.

Figure 6.1: Turkey's Population and Population Growth Rate, 1993-2009
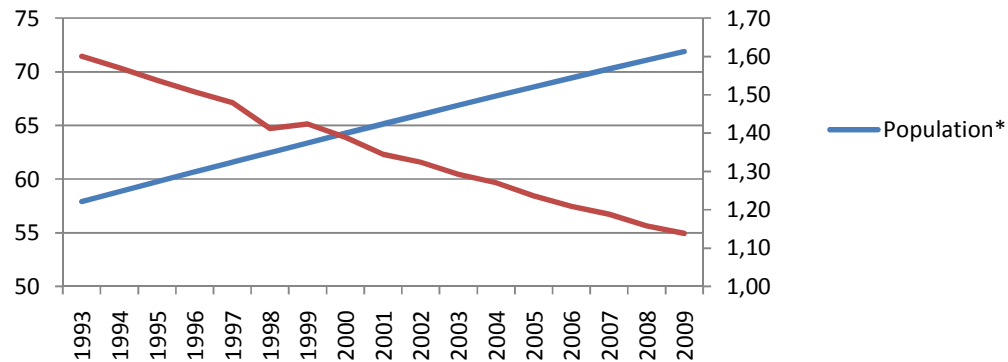
*: Million person
Source: Turkish Statistical Institute (2010f).

While Turkey's population was 58 million in 1993, it increased to 72 million in 2009. However, growth rate decreased from 1.6% to 1.1% (Turkish Statistical Institute, 2010f) between these periods. If the age distribution of Turkey's population is considered, one may observe that the younger groups dominate. The share of the group "less than 30 years of age" was 52.2% and the share of those "younger than 19 years of age" was 34.6% in 2009[28].

If Turkey's demographic structure is compared between 1990 and 2009, important changes are observed in some areas: such as urban population, and education level. While urban population constituted 51.3% of total

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[28] http://www.tuik.gov.tr/VeriBilgi.do?tb_id=39&ust_id=11

population of Turkey in 1990, it increased to 75.5% in 2009. Literacy has also increased in last 20 years. While the share of literate population was 80.5% (male 88.8%, female 71.9%) of the total population, it increased to 92.8% (male 97.2%, female 88%) in 2009.

Population increase is expected to affect mostly the basics, mainly food and textiles. This study will focus, however, on just a few examples, that are on fruits, vegetables and tea.

6.1.1 Fruits

With regard to agricultural foreign trade of Turkey, fruits were the main export product group. In 1993, the value of the Turkish fruit exports was 917 million US Dollars with a share of 24.4% in total agricultural exports and it increased to 3 billion US Dollars in 2009 (27.2%). Moreover, Turkey's fruit imports have been increasing from 2001 permanently. Fruit imports were 54 million US Dollars in 1993 with a share of 2.3% in total import value of Turkey, it increased to 312 million US Dollars (4%) in 2009.

Figure 6.2: Turkey's Fruits (dried and fresh) Foreign Trade (USD million)
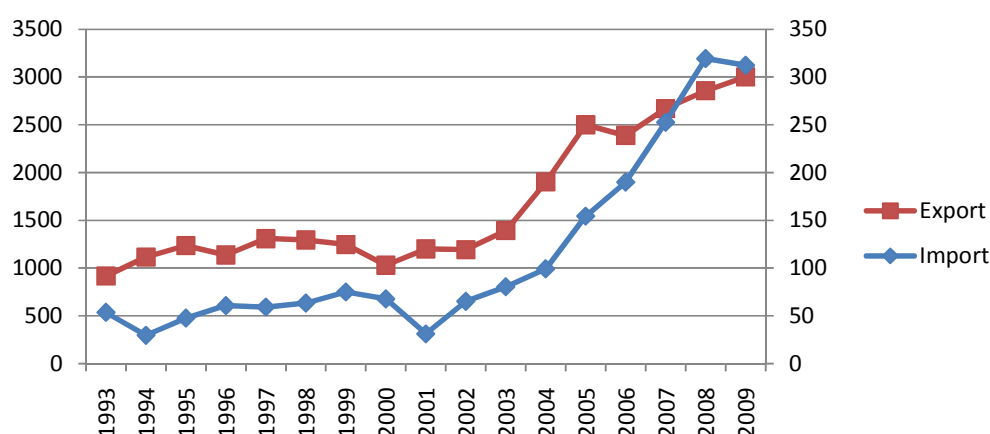
Source: Turkish Statistical Institute

As has already been mentioned, banana has the largest quantity among imported fruits to Turkey. However, along with banana; almond and walnut imports are increasing rapidly. Actually, the share of banana imports in total fruit imports decreased after 2001. In 2009, banana imports constituted just 27% of total fruit imports. It was followed by walnut imports with a share of 28% and almond with a share of 18.2%. It has already been showed that, together with chocolate, sugar and biscuit industry investments in Turkey, raw material demand of these sectors' have increased in recent years. Thus, increases of walnut and almond imports are mostly caused by deficient domestic production to meet these sectors' demand. According to foreign trade data, walnut, almond, coconut, date and citrus fruits imports increased by 100%, 99%, 83%, 94% and 84% between 1993 and 2009.

Figure 6.3: Turkey's Walnut, Almond and Citrus Fruits Imports (Thousand Dollars)
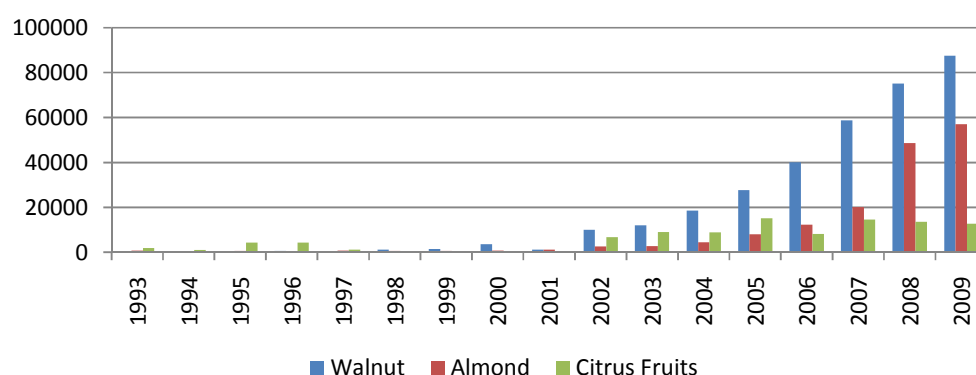
Source: Turkish Statistical Institute.

It is apparent that the most remarkable increase occurred in banana consumption (Table 6.1). Domestic banana production increased about 3 times in the 2008/09 marketing year compared to the 2000/01 marketing year and all domestic production is consumed domestically. However, to meet domestic consumption, imports increased 2.6 times.

Hazelnut, apricot, cherry, dried grape, fig, lemon and mandarin were the major export products of Turkey in the 1993-2009 period. Since hazelnut constituted 46.3% of total fruit exports in 1993, it decreased to 23.7% because of the increase in the other fruits' share in total fruit exports. According to the FAO data, Turkey was the biggest hazelnut (801 thousand tons) and apricot (751 thousand tons) producing country in the world in 2008. Moreover, Turkey ranked second (205 thousand tones) in total fig production in the world for same year.

Turkey's production in these fruits increases every year. While hazelnut production increased by 1.7 times, hazelnut exports increased by 1.3 times in the 2008/09 marketing year compared to the 2000/01 marketing year. For the same period, these ratios were 1.3 and 1.2 for apricot and 1.4 and 1.1 for cherry, respectively.

The ratios of self sufficiency were 88.8% for almond and 93.9% for walnut in 2000. However, as their per capita consumption started to increase after this year, the ratios of self sufficiency decreased to 85.7% for walnut and 84.3% for almond in 2009. As export quantities of these products are very low, it might be assumed that most of the domestic production is consumed domestically.

As it can be seen from the balance table, the population increase of Turkey has an effect on foreign trade, yet, as all variables change in time it is no so apparent. A very simple analysis may be helpful. First, it may be assumed that production does not increase after 1993 and per capita consumption is also assumed as a fixed quantity (as it was observed in 2009). Then, the deficient production quantity is calculated for some selected products. While Turkey exported 272 thousand tons of orange in 2009, under the assumptions posed above, there would be 618.5 thousand tons deficient supply, Turkey would have become a net orange importer country. If production had not increased while the population increased, Turkey, which

is the biggest apricot producer country in the world, would have become also a net apricot importer.

Table 6.1: Balance Table for some Fruits

	Market year	Production	Import	Export	Consumption	Per capita consumption	Degree of self sufficiency (%)	IDE
Orange	2009	1689.9	40.9	272.2	1458.5	20.3	115.9	2.8
	2008	1427.2	29.8	161.8	1295.2	18.2	110.2	2.3
	2007	1427.0	64.9	175.5	1316.3	18.7	108.4	4.9
	2006	1535.8	40.3	246.4	1329.7	19.2	115.5	3.0
	2005	1445.0	54.1	193.5	1305.5	19.0	110.7	4.1
Apricot	2009	660.9	0.0	71.9	642.5	8.9	102.9	0.0
	2008	716.4	0.0	71.1	694.3	9.8	103.2	0.0
	2007	557.6	0.0	70.3	542.7	7.7	102.7	0.0
	2006	460.2	0.0	69.4	446.2	6.4	103.1	0.0
	2005	860.0	0.0	68.6	850.2	12.4	101.2	0.0
Cherry	2009	610.4	0.0	51.1	559.3	7.8	109.1	0.0
	2008	523.8	0.1	28.6	495.3	7.0	105.8	0.0
	2007	579.1	0.0	57.1	522.0	7.4	110.9	0.0
	2006	431.8	0.0	53.9	377.8	5.4	114.3	0.0
	2005	420.0	0.0	35.8	384.2	5.6	109.3	0.0
Walnut	2009	177.3	30.8	1.2	206.9	2.9	85.7	14.9
	2008	170.9	24.7	1.5	194.1	2.7	88.0	12.7
	2007	172.6	16.2	0.6	188.2	2.7	91.7	8.6
	2006	129.6	17.6	0.3	146.9	2.1	88.2	12.0
	2005	150.0	14.4	0.2	164.1	2.4	91.4	8.7
Almond	2009	54.8	14.3	4.1	65.0	0.9	84.3	21.9
	2008	52.8	12.1	2.4	62.5	0.9	84.4	19.4
	2007	50.8	5.2	1.5	54.5	0.8	93.1	9.6
	2006	43.3	3.3	0.6	45.9	0.7	94.3	7.1
	2005	45.0	3.5	0.9	47.6	0.7	94.6	7.3

Source: Author's calculations based on the data from Turkish Statistical Institute (2010h).

Cherry is another important export product of Turkey and under the same assumptions, Turkey would have imported about 263 thousand tons cherry to met domestic demand. Similar developments would have been observed for walnuts and almonds. Turkey imported 30.8 thousand tons walnut in 2009; Turkey's imports would have increased to 90 thousand tons under the same assumptions.

Table 6.2: Deficient and Excess Production Quantities of Selected Fruits (Thousand Tons)

	Deficient supply in 2009 (Production fixed in 1993)	Excess Supply in 2009 (Population fixed in 1993)
Orange	-618.5	515.1
Apricot	-412.5	145.5
Cherry	-314.3	159.9
Walnut	-91.9	10.5
Almond	-17.0	2.7

Source: Author's calculations based on the data from Turkish Statistical Institute.

For stressing the population impact the same exercise may be shown for exports. Here, it is assumed that population does not increase after 1993, in other words it is fixed at about 58 million and per capita consumption quantities are taken as they are observed just in 2009. Then, the excess production quantity is calculated for selected products. According to this exercise, Turkey could have exported 202 thousand tons more orange, 73 thousand tons more apricot and 109 thousand tons more cherry than the actual export quantities in 2009. As for walnut and almond foreign trade, Turkey could have exported 10.5 thousand tons of walnut and 2.7 thousand tons almond after covering the domestic demand.

Consequently, if production had not increased parallel to population, Turkey could have become a net importer country even for recent export products. Under the assumption of "no population increase", there would be no need for imports. Moreover, Turkey could have exported more or could have increased exports significantly. Similar outcomes could have been observed for the majority of agricultural products.

6.1.2 Vegetables and Tea

Turkey is a net exporter country in the vegetable group, too. While vegetable exports amounted to 351 million US Dollars with a share of 9.3% in total agricultural exports, it increased to 1.02 billion US Dollars (9.3%) in 2009. Turkey's exports of the vegetable group have been increasing since 2001,

similar to fruits. As for vegetable imports, it increased from 40 million US Dollars to 246 million US Dollars in the same periods.

Figure 6.4: Turkey's Vegetables Foreign Trade (USD million)
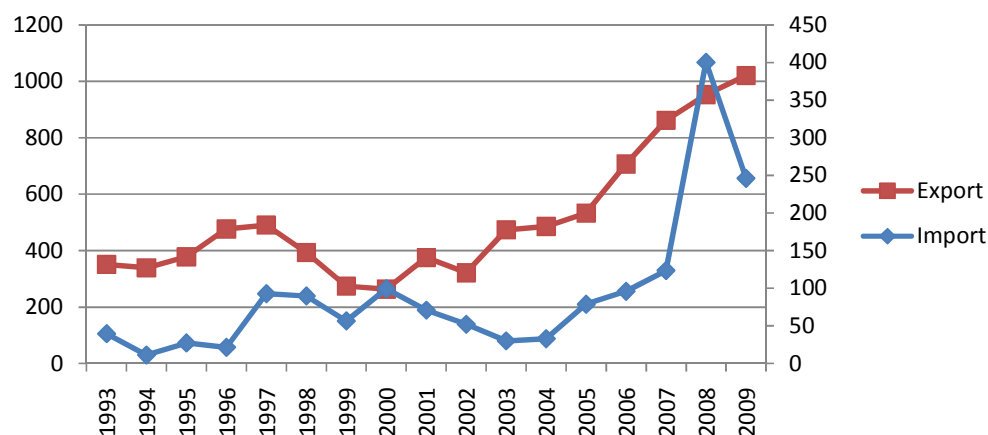
The main export products in the vegetable group were tomatoes, cucumber and dry pulses. Since 2008, Turkey has again become a net dry pulses exporter country. According to the FAO's data before the drought (2006), Turkey ranked third in lentil production, second in chickpea production and ranked fifth in tomato production in the world[29]. While Turkey ranked third in lentil and chickpea exports, it ranked tenth in tomato exports because most of the tomato production supplied the domestic consumption.

Dry pulses had a significant place in total vegetable exports with a share of 52.6%, which corresponds to 184 million US Dollars in 1993 and this value increased to 270 million US Dollars (26.5%) in 2009. Lentil and chickpea played a key role in dry pulses foreign trade. In 1993, the share of tomato exports as a percentage of total vegetable exports was 10% whereas it increased to 40% in 2009. For the same period, the share of cucumber exports in total vegetable exports increased from 1% to 6.5%. Since Turkey

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[29] See http://faostat.fao.org/site/342/default.aspx

is a self sufficient country in tomato and cucumber, import dependency ratios of these products are very low.

In recent years, there existed a rapid decrease in lentil and chickpea production in Turkey. Moreover, the quality increase achieved in other producer countries such as Canada and Australia has increased their foreign trade competitiveness[30]. As it can be seen from Table 6.3, while dry pulses' production and export quantities have decreased permanently, they became one of the major import products in vegetable group of Turkey in recent years.

Because of the drought that occurred in the largest dry pulses growing region, Southeast Anatolia Region, caused yield and area decreases in 2007. According to the Turkish Statistical Institute's data, Turkey's dry pulses production quantities decreased compared to former year by 21% for dry bean, 5% for lentil and 8.5% for chickpea. As for 2008 data, domestic use of dry pulses decreased compared to former year by 16% for dry bean, 44% for lentil and 3.5% for chickpea.

In 2009, while lentil growing areas decreased by 70% compared to 1993, chickpea area decreased about 45%. Within the same period, yield increases were 37% and 30% respectively. While, these developments influenced Turkey's dry pulses foreign trade, increase in the population strengthened the need for imports.

As it can be seen from the Table 6.3, the analysis is repeated for vegetables and tea. In the first, it is assumed that Turkey's production of these products does not increase but population and per capita consumption are taken with their real values in 2009. Although tomato is one of the leading export products of Turkey, under the proposed assumptions the deficiency in domestic supply would have amounted to nearly 4 million tons. With respect

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[30] See, AERI, (2004)

to cucumber foreign trade, while Turkey exported 95 thousand tons cucumber in 2009, it would have turned out to be a net cucumber importer country under the same assumptions.

Table 6.3: Balance Table for some Vegetables and Tea

	Market year	Production	Import	Export	Consumption	Per capita consumption	Degree of self sufficiency (%)	IDE
Tomatoes	2009	10745.6	0.0	542.1	10203.4	141.9	105.3	0.0
	2008	10985.4	0.1	440.2	10545.2	148.4	104.2	0.0
	2007	9936.6	0.0	372.1	9564.5	136.1	103.9	0.0
	2006	9854.9	0.0	304.4	9550.5	137.6	103.2	0.0
	2005	10050.0	0.1	250.2	9799.9	142.9	102.6	0.0
Cucumber	2009	1735.0	0.0	95.2	1639.8	22.8	105.3	0.0
	2008	1682.8	0.0	80.0	1602.7	22.5	104.2	0.0
	2007	1670.5	0.0	58.5	1612.0	22.9	103.9	0.0
	2006	1799.6	0.0	51.7	1747.9	25.2	103.2	0.0
	2005	1745.0	0.0	31.4	1713.6	25.0	102.6	0.0
Dry bean	2009	181.2	53.3	18.6	215.9	3.0	83.9	24.7
	2008	154.6	51.1	3.0	202.7	2.9	76.3	25.2
	2007	154.2	36.8	1.7	189.4	2.7	81.4	19.4
	2006	196.0	30.9	2.7	224.2	3.2	87.4	13.8
	2005	210.0	37.3	1.7	245.6	3.6	85.5	15.2
Chickpea	2009	562.6	4.4	88.5	478.5	6.7	117.6	0.9
	2008	518.0	8.8	88.3	438.4	6.2	118.1	2.0
	2007	505.4	5.2	69.2	441.4	6.3	114.5	1.2
	2006	551.7	1.9	104.7	448.9	6.5	122.9	0.4
	2005	600.0	0.6	123.6	477.1	7.0	125.8	0.1
Lentil	2009	302.2	141.5	130.1	313.7	4.4	96.3	45.1
	2008	131.2	191.7	70.3	252.5	3.6	51.9	75.9
	2007	535.2	31.0	186.3	379.9	5.4	140.9	8.2
	2006	622.6	69.1	301.3	390.4	5.6	159.5	17.7
	2005	570.0	64.3	118.4	515.9	7.5	110.5	12.5
Tea	2009	198.6	5.4	1.8	202.2	2.8	98.2	2.7
	2008	198.0	4.3	3.2	199.2	2.8	99.4	2.2
	2007	206.2	3.5	3.3	206.3	2.9	99.9	1.7
	2006	201.9	3.8	2.7	203.0	2.9	99.4	1.9
	2005	217.5	3.3	5.8	215.1	3.1	101.1	1.5

Source: Author's calculations based on the data from Turkish Statistical Institute (2010ı).

Under the second set of assumptions, "no population increase", although the actual import quantity exceeded the export quantity of dry bean and lentil Turkey could have still exported 49 thousand tons more lentil and 7 thousand tons more dry bean. Similarly, Turkey could have exported about 2.5 million tons of tomato, 414 thousand tons of cucumber and 177.2 thousand tons of chickpea.

Table 6.4: Deficient and Excess Production Quantities of Selected Vegetables and Tea (Thousand Tons)

	Deficient supply in 2009 (Production fixed in 1993)	Excess Supply in 2009 (Population fixed in 1993)
Tomatoes	-4053.4	2526.7
Cucumber	-589.8	414.1
Dry bean	-15.9	7.3
Chickpea	-261.5	177.2
Lentil	-421.3	49.5
Tea	-85.1	35.8

Source: Author's calculations based on the data from Turkish Statistical Institute.

Per capita tea consumption quantities vary according to a country's tradition. For instance, while per capita tea consumption is 3 kg/year in England and Ireland, it is 1 kg/year on average in the EU. The restrictions on coffee imports for long periods in Turkey during the 1950's caused to a shift to tea consumption. While per capita tea consumption was 1.4 kg/year in 1993, it increased to 2.8 kg/year in 2009.

Turkey is unique in the EU geographic area that produces tea and again unique in producing tea without the use of chemical pesticides. According to the FAO statistics, Turkey ranks fifth among tea producers, after China, India, Sri Lanka and Kenya. However, there was a rapid decrease in Turkey's tea exports in 1993, and maintained a continuing parallel movement to import quantity after this year. While population increased by 1.24 times between 1993 and 2009, per capita tea consumption increased by 2.1 times and tea production increased by 1.7 times.

Figure 6.5: Turkey's Tea Foreign Trade (Thousand Tons)
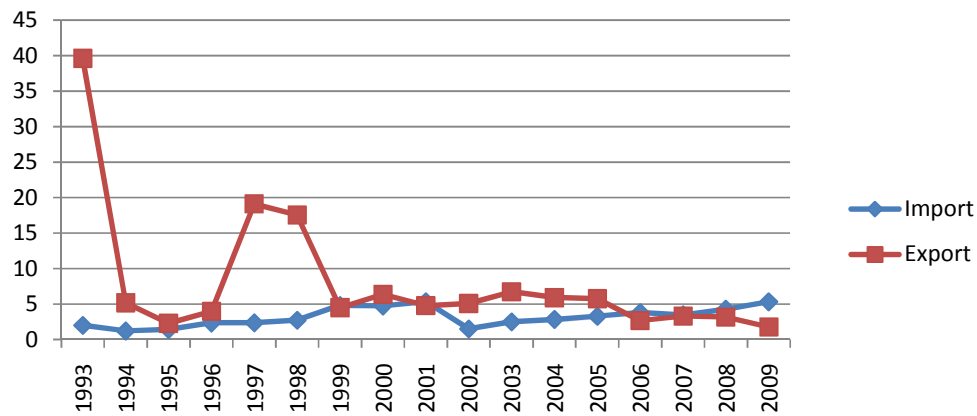
Turkey's tea exports decreased to 1.8 thousand tons in 2009. However, if Turkey's population had not increased after 1993, Turkey could have exported 35.8 thousand tons of tea in 2009. From another point of view, if Turkey's tea production had not increased after 1993, Turkey would have to import almost 85 thousand tons of tea.

6.2 Income

National income measures the money value of the flow of output of goods and services produced within an economy over a period of time. As for economic growth, it is measured as the rate of change in real GDP, refers only to the quantity of goods and services produced. It affects many macroeconomic variables in the economy, such as imports. There is a positive relationship between import and economic growth and it can be expressed by two ways. Firstly, a rise in economic growth would induce an increase in imports, the reason being that high real income promotes consumption. Secondly, in order to produce goods and services, some investment goods or raw materials which are not produced domestically, have to be imported by the country. Consequently, positive economic growth is one of the major factors significantly affecting the demand for imports.

While the relationship between agricultural imports and income is analyzed, development of per capita GDP of Turkey should be considered. As it can be seen from Figure 6.6, per capita GDP of Turkey has been increasing steadily in the 1998-2008 period. However, it decreased in 2009 due to recent economic crisis. Since per capita GDP was 1124 TL in 1998, it increased to 13250 TL in 2009. This increase in per capita GDP is surely expected to affect all agricultural products. However, an interesting example from Turkey might be the consumption and foreign trade of animal products.

Figure 6.6: Per capita GDP of Turkey, 1998-2009

■ Per capita GDP (TL)
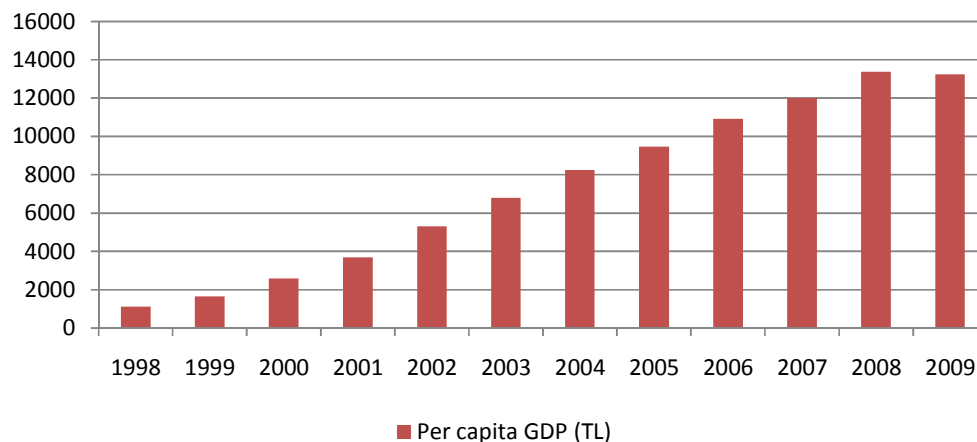
Source: Turkish Statistical Institute (2010k).

6.2.1 Live Animals

From the point of view of environmental protection, animal and human health, live animals exports and imports are under strict control all over the world. The Ministry of Agriculture and Rural Affairs General Directorate of Protection and Control are responsible for these controls. Both import and export amounts of live animals have been quiet low since 1996.

As World Organization for Animal Health (O.I.E) points out that Turkey is a risky country concerning BSE disease. Therefore, Turkey has not exported live animals and meat and meat preparations to the European Union

countries for many years. On the other hand, Turkey also has not imported live animals because of BSE disease since 1996. Bird Flu, which effected European Union countries, is another factor that extended the import ban period.

Figure 6.7: Turkey's Live Animals Foreign Trade (USD million)
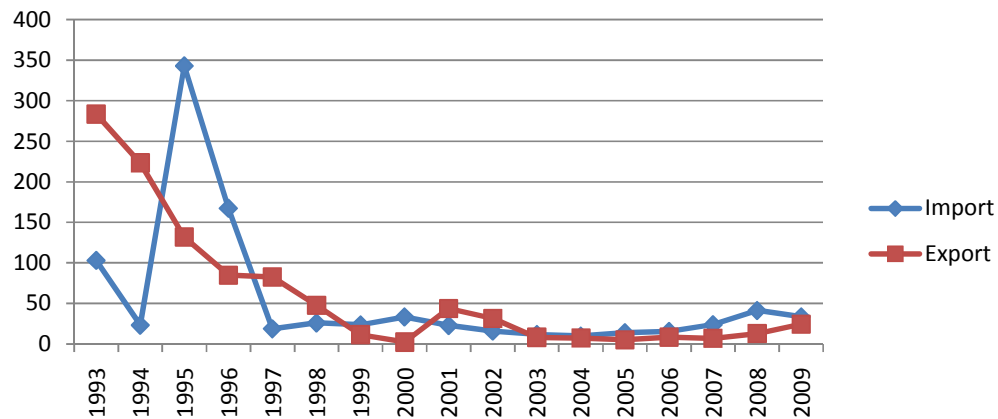
Turkey's cattle production amounted to 11 million units on average for the 1993-2009 period. As it can be seen from Figure 6.7, having a goal of improving stock raising, 107 million US Dollars of pure-bred breeding animals and 223 million US Dollars of other than pure bred breeding animals were imported in 1995. However, most of these animals went to the slaughterhouse before bringing forth young calves and this high importation could not reach its goal. At the end of the selected period, Turkey's live animal imports decreased to 34 million US Dollars.

Figure 6.8: Number of Cattle, Sheep and Goat in Turkey (Million Units)
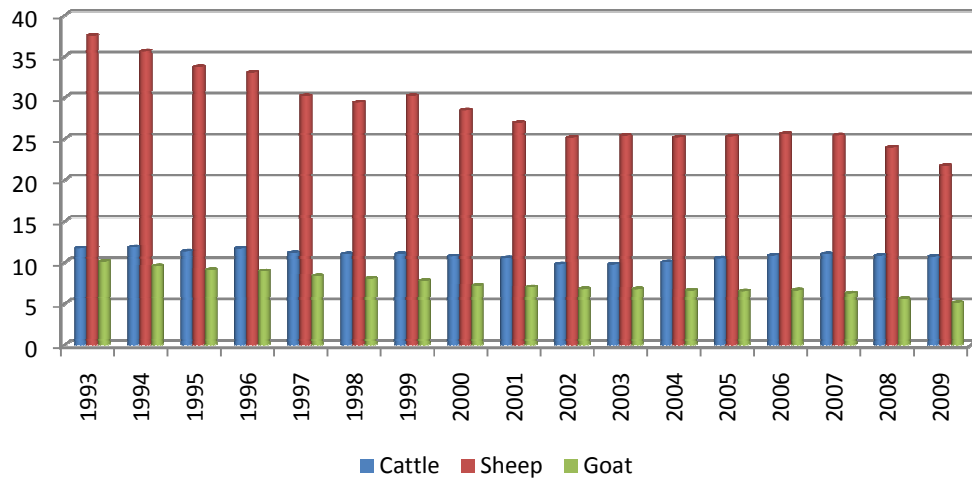
6.2.2 Meat and Meat Preparations

Meat and meat preparations foreign trade are affected from import and export prohibitions, too. While Turkey's meat production has been decreasing for years, its imports increased from 31 million US Dollars to only 77 million US Dollars between 1993 and 2009. Turkey signed a Customs Union Agreement with the EU in 1995. After this agreement the preferential trade agreement for agriculture was updated and Turkey committed voluntarily to import 19 thousand tons of frozen meat and 3.5 thousand tons of meat from the EU countries each year. So, there was a sudden jump in 1995. Yet, BSE disease appeared in 1996 in the EU and imports decreased to very low quantities. On the other hand, Turkey's meat and meat preparations exports were 19 million US Dollars in 1993. However, it increased to 155 million US Dollars in 2009. But, these were poultry exports to Iraq and Azerbaijan.

Figure 6.9: Turkey's Meat and meat preparations Foreign Trade (USD million)
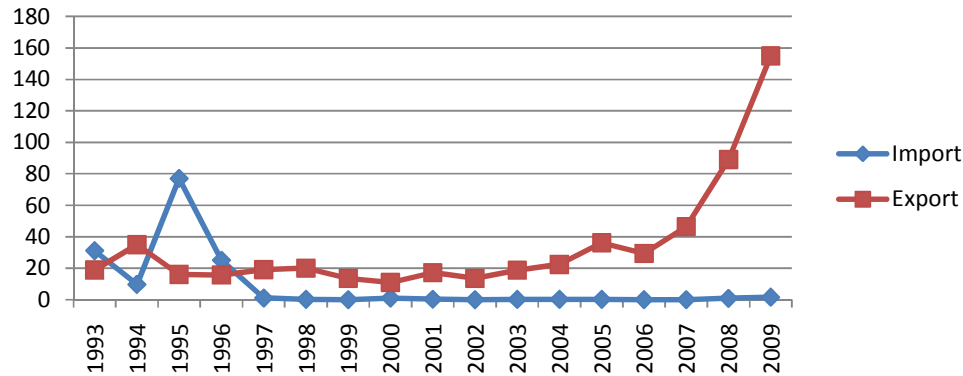
Source: Turkish Statistical Institute.

Increasing in meat and meat preparations demand is usually related to a country's development level. The USA, Japan and the EU are the most developed countries in the world. According to the World Bank (2010) data, since per capita GDP of the USA was about 47.2 thousand US Dollars in 2008, it was about 9.8 thousand US Dollars in Turkey. As it can be seen from Table 6.5, comparing the EU countries and the USA, Turkey's per capita consumption of meat and dairy products were very low. Moreover, per capita meat consumption of Brazil, Mexico, Argentina and Chile, whose per capita GDP are nearby Turkey's, were also higher.

Because the Japanese people consume fish and fish products more than meat, its per capita meat production was lower than the other countries. In respect of per capita cattle meat consumption, while it was 45.4 kg/year in the USA and 18.2 kg/year in the EU, it was 6.4 kg/year in Turkey in 2008. On the other hand, Turkey's per capita sheep meat consumption quantities were higher than most of the other countries. Per capita chicken meat consumptions were all very similar in Turkey, Japan and the EU, but it was about 3 times more in the USA.

Table 6.5: Per capita Meat and Dairy Products Consumption, 2008 (kg/per/year)

Country	Per capita GDP (US Dollar)	Cattle Meat Per capita consumption	Sheep Meat Per capita consumption	Chicken Meat Per capita consumption	Cow Milk Per capita consumption	Hen Egg Per capita consumption
Belgium	47194	21.26	1.75	21.54	268.8	14.5
France	44471	23.49	3.39	13.16	386.2	16.5
Netherlands	53076	25.00	0.89	25.38	682.9	26.3
Luxembourg	117955	37.95	1.92	34.70	316.7	6.9
Germany	44264	13.13	0.66	9.42	345.4	12.5
Italy	38385	21.68	1.35	12.69	213.5	12.2
Denmark	62036	24.42	1.06	22.45	827.8	17.6
U.K.	43361	14.33	53.50	21.78	217.8	10.5
Ireland	60178	109.82	4.27	25.83	1236.6	8.4
Greece	31174	13.23	9.06	12.47	81.5	9.3
Portugal	23708	14.73	2.59	23.38	189.1	12.0
Spain	35000	12.84	3.25	23.92	147.9	15.0
Austria	49739	22.36	19.07	12.20	324.5	13.1
Finland	50905	154.48	0.48	17.88	434.4	9.9
Sweden	52884	14.60	1.24	14.27	333.0	10.7
Czech Rep	20729	7.90	0.21	21.15	220.8	9.9
Estonia	17541	10.12	0.42	16.74	476.5	11.0
Cyprus	31410	5.12	5.46	37.08	177.3	12.3
Latvia	14937	7.39	0.35	19.35	308.5	15.7
Lithuania	14034	12.55	0.16	23.15	636.3	12.2
Hungary	15408	2.22	0.10	20.62	174.4	16.8
Malta	18300	5.38	1.94	21.51	100.5	20.5
Poland	13857	6.74	0.04	15.55	322.0	12.6
Slovak Rap	18212	69.95	0.17	15.87	179.2	14.4
Slovenia	26911	19.15	0.81	21.95	250.7	9.6
Bulgaria	6798	2.88	1.38	16.09	149.8	11.3
Romania	9300	6.90	2.15	18.29	256.7	15.9
EU	36667	18.23	8.48	16.60	286.6	13.5
Turkey	9881	6.40	4.80	17.44	194.3	12.9
USA	47209	45.41	0.58	51.56	331.3	20.3
Japan	38268	4.18	0.19	14.36	64.1	20.5
Brazil	8609	57.53	0.56	44.29	175.8	11.7
Australia	48499	97.99	17.67	36.17	428.2	7.5
India	1067	0.79	0.18	0.57	38.7	2.6
Russia	11743	14.04	1.22	22.10	226.1	14.9
Argentina	8189	70.81	1.16	24.31	258.3	12.0
Mexico	10248	15.67	3.50	28.20	101.7	22.0
Chile	10167	14.28	0.39	28.99	151.8	8.3

Per capita consumption= (Production + Import - Export)/Population

Source: Author's calculations based on the production, export and import data from FAO and per capita GDP and population data from World Bank (2010b).

Turkey's per capita cow milk consumption which was 194.3 kg/year in 2008 ranked far behind the USA (331.3 kg/year) and the EU (286.6 kg/year). Moreover, per capita hen egg consumption of Turkey was 0.6 kg/year much lower than the EU and 7.4 kg/year lower than the USA in 2008.

All these figures indicate to the correspondence between Turkey's relatively low per capita GDP and low per capita meat and dairy products consumption. It is also evident, if Turkey would like to reach the per capita consumption level in the EU in a very short period of time, that is, without being able to increase its own production sufficiently, the required supply could be met only through substantial imports.

Turkey has not imported cattle meat since 1997. In spite of this, Turkey could hold the number of cattle around 11 million head and per capita cattle meat consumption about 10 kg/year. However, decreases in production especially in 2007 and 2008 caused decreases in per capita meat consumption. As can be seen from Table 6.6, Turkey's cattle meat production decreased from 560.2 thousand tons to 370.6 thousand tons between 1993 and 2008. Meanwhile, per capita consumption of cattle meat decreased to 6.4 kg/year in Turkey and it is 18.2 kg/year in the EU (27). Although there was an important decrease in both Turkey and the EU, per capita cattle meat consumption in the EU was 3 times more than in Turkey in 2008.

Table 6.6: Production and Deficient Supply of Cattle and Chicken Meat in Turkey (Thousand Tons)

	Cattle Meat		Chicken Meat	
Year	Production	Deficient Supply	Production	Deficient Supply
1993	560.2		444.0	
2008	370.6	5251	1087.5	31

Note: Ten countries joined the EU in May 2004.

Source: Author's calculations based on the data from Turkish Statistical Institute.

Hypothetically, if Turkey's consumption had to be increased to the EU (27) average 18.2 kg/year immediately; this would have required an import about 5.25 million tons cattle meat. The assumption done here is of course quiet unrealistic, still it indicates, if Turkey becomes a full member of the EU and if per capita GDP would increase rapidly, this will cause probably a considerable meat import.

In recent years, the decrease in red meat production and import ban has caused a shortage. The domestic demand in Turkey cannot be met. This situation causes rapid increases in the price of red meat. This increase has an impact on its substitutes for example on poultry meat. Per capita poultry meat consumption was 7.6 kg/year in 1993; it increased to 12.9 kg/year in 2008 and reached almost per capita consumption in the EU. During the same period Turkey's poultry meat (mainly chicken) production increased by 2.5 times and chicken meat exports increased to 60 thousand tons.

6.2.3 Dairy Products

The other group within the livestock products group is dairy products. This group consists of milk and cream, butter, cheese and eggs. As has been already shown per capita dairy products of more developed countries are quite high.

Figure 6.10: Turkey's Dairy Products Foreign Trade (USD million)
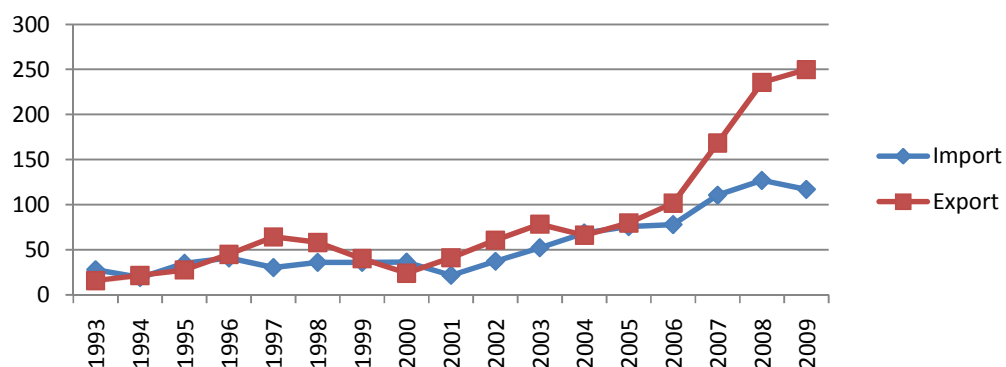
Source: Turkish Statistical Institute.

Turkey's dairy products foreign trade has been increasing since 2001. In 2009, imports of dairy products of Turkey reached 117 million US Dollars and exports of dairy products reached 250 million US Dollars. While cheese and eggs were the most important dairy exports, "milk and cream" and butter were the most important dairy imports. According to the Turkish Statistical Institute's data, cow milk imports stopped since 1995 and cow milk exports were negligible. Since Turkey's cow milk production was about 8.9 million tons in 1993, it increased to about 11.2 million tons in 2008.

Table 6.7: Production and Deficient Supply of Cow Milk and Hen Egg in Turkey (Thousand Tons)

	Cow Milk		Hen Egg	
Year	Production	Deficient Supply	Production	Deficient Supply
1993	8904		500	
2008	11255	3058681	824	8760

Note: Ten countries joined the EU in May 2004.
Source: Author's calculations based on the data from Turkish Statistical Institute.

However this increment is not sufficient to reach per capita consumption in the EU. Obviously, per capita cow milk consumption was about 3 times bigger in the EU since 2004. However, per capita consumption quantities of all livestock products started to decrease owing to enlargement of the EU. If Turkey's per capita cow milk consumption had been 286 kg/year in 2008, Turkey would have to import about 3 billion tons of cow milk. As for hen egg, under the same assumption, Turkey would have to import about 8.7 million tons of hen eggs.

6.3 Exchange Rate

An exchange rate is the price of one currency in terms of another currency. It is the most important determinant which establishes relationship with national and international relative prices. For this reason, exchange rate is another major factor significantly affecting the demand for imports.

There is an inverse relationship between relative price and demand of a product. A relative price may be expressed in terms of nominal exchange rate that is multiplied by the ratio between foreign prices and domestic prices of a good. Consequently, demand of a good also has an inverse relation with exchange rate. As exchange rate decreases, the relative prices of import goods decreases and so demand increases.

Exchange rate is determined either by the market forces or monetary authority, is exposed to adjustments by monetary authority from time to time. In the event that the rate of exchange is increased under the rate of relative inflation by the monetary authority, purchasing power of foreign currency is dropped down and import becomes cheap. That is overvalued national currency. In order to put a stop to a national currency becoming overvalued, devaluation, a deliberate downward adjustment to a country's official exchange rate relative to other currencies, can be done by the governments. In Turkey, the government devalued the Turkish Lira against the US Dollars two times in 1993-2009 period. The first of them was done in 1994 and the second was done in 2001. As it can be seen from Table 6.8, the value of Turkish Lira decreased in a year by 170% after 1994 and it decreased in a year by 96.5% in a year after 2001.

Table 6.8: Exchange Rate of TL for US Dollars

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Average Exchange rate	0.01	0.03	0.05	0.08	0.15	0.26	0.42	0.63	1.23	1.51	1.50	1.43	1.35	1.31	1.30	1.55
% Change	60.5	170	54.0	78.0	86.8	71.6	61.0	48.5	96.5	22.9	-0.8	-4.7	-5.7	-3.0	-0.6	19.6

Source: Central Bank of the Republic of Turkey (2010).

This study does not answer the question, whether TL is overvalued over the period of the analysis. It assumes that there was some overvaluation. Just after the devaluation it is again assumed that real exchange rate is achieved.

Without quantifying the overvaluation, the most affected import products are empirically identified. However, the impact of the changes in exchange rate appeared in some groups of agricultural products strikingly. Oil seeds, residues and waste from food industry, miscellaneous edible products' import seem to be the most affected import items after the devaluation.

6.3.1 Oil seeds

Turkey was a net importer of oil seeds for the 1993-2009 period. In 1993, the value of the Turkish oil seeds imports was 99 million Dollars with a share of 4.3% in total agricultural imports and it increased to 1 billion Dollars in 2009 (13.6%). Among oil seeds the largest product group was soybeans (40.7%), followed by sunflower seeds (22.8%) and sesame seeds (12.2%) in 2009.

Figure 6.11: Turkey's Oil seeds Foreign Trade (Thousand Tons)
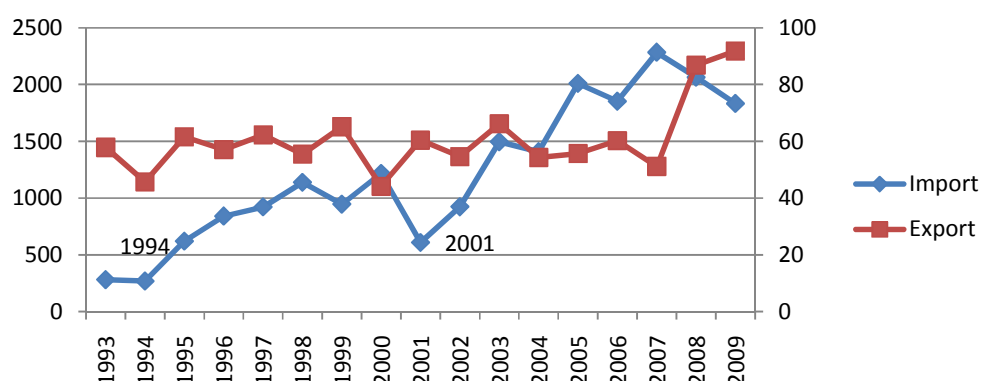
Source: Turkish Statistical Institute.

Although the change in import price of oil seeds was 185.3% by national currency in 1994, it was 5.3% by foreign currency. In other words, such an increase in import price was mostly caused by the change in exchange rate. Moreover, the change in import demand was mostly affected by import price in 2001. Since the change in import price was 131.7% in 2001, the volume of oil seeds imports decreased from 1.2 million tons to 608 thousand tons between 2000 and 2001.

Table 6.9: Import Quantity and Import Price of Oil Seeds

Year	Import quantity (Thousand Tons)	% change in Import Quantity	Import Price (Dollar)	% change in Import Price	Import Price * Exchange rate	% change in Import Price* Exchange rate
1993	281		0.35		0.004	
1994	269	-4.5	0.37	5.3	0.011	185.3
1995	620	130.8	0.38	3.0	0.018	58.6
1996	840	35.6	0.33	-13.0	0.027	54.8
1997	921	9.6	0.32	-3.6	0.049	80.2
1998	1138	23.5	0.31	-3.1	0.081	66.2
1999	946	-16.9	0.28	-10.4	0.117	44.3
2000	1217	28.7	0.23	-18.2	0.143	21.4
2001	608	-50.0	0.27	17.9	0.330	131.7
2002	923	51.7	0.29	8.3	0.440	33.2
2003	1495	62.0	0.32	10.3	0.481	9.4
2004	1407	-5.9	0.38	17.6	0.539	12.1
2005	2009	42.8	0.35	-7.9	0.468	-13.2
2006	1851	-7.8	0.33	-4.2	0.435	-7.1
2007	2283	23.3	0.45	34.3	0.581	33.5
2008	2063	-9.6	0.71	58.8	1.103	90.0
2009	1832	-11.2	0.58	-18.9	0.874	-20.8

Source: Author's calculations based on the data from Turkish Statistical Institute.

Apart from exchange rate, domestic production is another important factor in determining import demand of oil seeds. The soybean planted area in Turkey was small but even this tiny area has decreased by 61% between 1993 and 2009, and degree of self sufficiency of soybean is low in Turkey.

Another important oil seed is sunflower. The degree of self-sufficiency of sunflower is relatively higher. Annually average domestic production of sunflower seeds was 880 thousand tons and 90% of the production was done to produce sunflower oil. However, this quantity was insufficient to produce sufficient sunflower oil for the domestic market. Yet, the degree of self-sufficiency for cotton seeds is quiet high.

Table 6.10: Oil seeds Balance Table (Thousand Tons)

	Year	Production	Usable Production	M	Domestic use	C	X	Degree of Self sufficiency (%)	IDI (%)
Sunflower	08/09	992	984	1676	2112	2061	417	46.6	81.3
	07/08	854	848	1475	2213	2161	206	38.3	68.3
	06/07	1118	1109	912	1950	1903	116	56.9	47.9
	05/06	975	967	1695	2397	2341	312	40.3	72.4
	04/05	900	893	961	1731	1688	158	51.6	56.9
	03/04	800	794	944	1501	1462	170	52.9	64.6
	02/03	850	843	328	994	966	169	84.8	33.9
	01/02	650	645	824	1492	1454	102	43.2	56.7
	00/01	800	794	552	1132	1102	197	70.1	50.1
Soybean	08/09	34	34	1141	1151	744	24	3.0	153
	07/08	31	30	1465	1462	946	39	2.1	155
	06/07	47	47	2051	2041	1284	51	2.3	160
	05/06	29	29	1964	1977	1299	16	1.5	151
	04/05	50	50	1504	1530	1510	30	3.3	99.6
	03/04	85	84	1200	1254	1236	48	6.7	97.1
	02/03	75	75	1468	1509	1487	71	4.9	98.7
	01/02	50	50	1763	1813	1788	16	2.7	98.6
	00/01	45	44	1090	1145	1129	5	3.9	96.5
Cotton	08/09	1077	1056	66	1111	1039	17	95.0	6.3
	07/08	1321	1294	36	1295	1213	29	99.9	2.9
	06/07	1477	1447	24	1451	1361	21	99.7	1.8
	05/06	1291	1265	240	1483	1389	21	85.4	17.3
	04/05	1371	1344	93	1416	1327	21	94.9	7.0
	03/04	1337	1310	46	1341	1252	16	97.7	3.7
	02/03	1457	1428	23	1310	1222	141	109.0	1.9
	01/02	1354	1327	65	1357	1264	34	97.8	5.1
	00/01	1295	1269	166	1413	1318	22	89.8	12.6

Usable production= Production- Loses **Import Dependency Index (IDI)** = Import/ Consumption **Degree of self sufficiency** =Usable Production/ Domestic use

Source: Author's calculations based on the data from Turkish Statistical Institute (2010m).

The stability of the exchange rate after 2001 may also encouraged the import of oil seeds. Regarding import dependency indexes (IDI), while IDI was 96.5% for soybean in the 2000/01 marketing year, it increased to 153.3% in the 2008/09 marketing year. The indexes for sunflower seeds were 50.1% and 81.3% respectively over the same period.

6.3.2 Residues and Wastes from Food Industry

In Turkey, Süt Endüstrisi Kurumu (S.E.K.), some parts of Et ve Balık Kurumu (E.B.K.) and Yem Sanayi A.Ş. were privatized in East and Southeast Anatolian Regions. Furthermore, increasing unrest caused an accelerated migration from rural to urban areas during the last 20 years. Consequently, the transition from pasture live stock fattening to stock raising on the farm has increased demand of feeding stuff for animals, which is the highest cost share of stock raising.

In Turkey, meadow and pasture, an important source for animal feeding, continually decreases. The production of feed is also low. So, Turkey's feeding stuff imports have started to increase. Within this group, residues of soybeans are the largest imported product. Moreover, imports of animal food for cats and dogs have also on the rise since 1998.

Figure 6.12: Turkey's Residues and Wastes Foreign Trade (Thousand Tons)
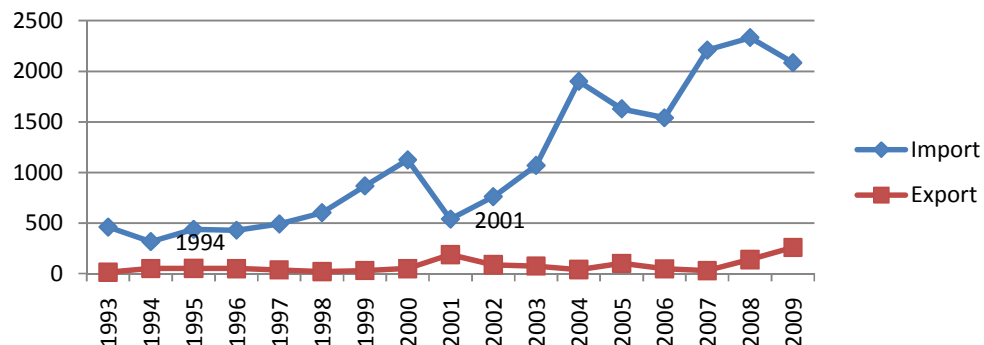
Source: Turkish Statistical Institute

While residues and wastes from food industry imports have been increasing from 1994, there appeared a rapid decrease in 2001 owing to rapid increase in import prices by national currency. In 1994 and 2001, the change in import price of residues and wastes of food industry by foreign currency was 12.1% and 37.7% respectively but the change in import price by national currency was 203.7% and 170.4%. Consequently, the decrease of imports in these, products were significant. The decrease was in 1994 (31.5%) and 2001 (52.1%). All these observations reveal that the devaluation had a negative impact on imported quantities of this product group.

Table 6.11: Import Quantity and Import Price of Residues and Wastes from Food Industry

Year	Import quantity Thousand Tons)	% change in Import Quantity	Import Price (Dollar)	% change in Import Price	Import Price * Exchange rate	% change in Import Price * Exchange rate
1993	460		0.24		0.003	
1994	315	-31.5	0.27	12.1	0.008	203.7
1995	437	38.7	0.23	-14.3	0.011	32.0
1996	428	-1.9	0.35	51.0	0.029	168.8
1997	489	14.2	0.38	7.6	0.057	101.2
1998	602	23.0	0.26	-30.3	0.069	19.6
1999	866	43.9	0.20	-22.4	0.086	25.0
2000	1124	29.7	0.18	-9.7	0.115	34.1
2001	538	-52.1	0.25	37.7	0.311	170.4
2002	759	41.1	0.19	-25.0	0.287	-7.8
2003	1068	40.7	0.19	-1.4	0.281	-2.2
2004	1901	77.9	0.21	12.9	0.302	7.5
2005	1628	-14.4	0.21	-0.7	0.282	-6.4
2006	1539	-5.5	0.21	-2.1	0.268	-5.0
2007	2208	43.5	0.25	20.9	0.322	20.1
2008	2333	5.7	0.33	33.5	0.515	59.7
2009	2084	-10.7	0.27	-19.4	0.405	-21.3

Source: Author's calculations based on the data from Turkish Statistical Institute.

6.3.3 Miscellaneous Edible Products

Turkey was a net exporter in miscellaneous edible products in the 1993-2009 period. Since the export value of this group was 38 million Dollars in 1993, it increased to 544 million Dollars in 2009 and constituted 5% of the total agricultural exports value of Turkey in 2009. On the other hand import value of this group also increased especially after 2001.

Figure 6.13: Turkey's Miscellaneous Edible Products Foreign Trade (Thousand Tons)
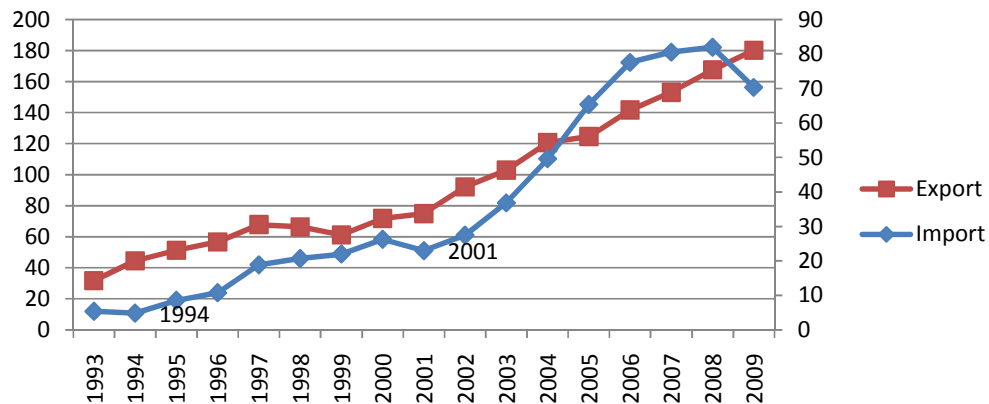
Source: Turkish Statistical Institute.

Regarding import quantities, there was a great dominance of other food preparations group (sugar syrups, jellies, alcohol preparations) with a share of about 62% and essences and concentrates of coffee and preparations group rank second with a share of about 24% in total miscellaneous edible products import. While the import quantity of other food preparations increased by 3.6 times, essences and concentrates of coffee and preparations increased by 2.7 times between 2001 and 2009.

As it can be seen from the Figure 6.13, this group's import and export quantities increased in the selected period. However, there were rapid and temporary decreases in import in 1994 and 2001.

Table 6.12: Import Quantity and Import Price of Miscellaneous Edible Products

Year	Import quantity (Thousand Tons)	% change in Import Quantity	Import Price (Dollar)	% change in Import Price	Import Price * Exchange rate	% change in Import Price * Exchange rate
1993	5.4		3.7		0.04	
1994	4.8	-10.2	4.0	6.3	0.12	188.1
1995	8.5	77.1	4.2	7.0	0.19	64.8
1996	10.7	25.9	6.7	57.1	0.54	179.7
1997	18.9	75.6	4.4	-34.5	0.67	22.5
1998	20.7	9.7	4.2	-3.9	1.10	65.0
1999	22.0	6.2	4.4	4.2	1.84	67.7
2000	26.2	19.5	4.1	-5.0	2.60	41.0
2001	22.9	-12.5	4.3	4.2	5.32	104.7
2002	27.4	19.5	4.9	12.4	7.35	38.1
2003	36.8	34.2	4.3	-12.1	6.41	-12.8
2004	49.6	34.8	4.6	7.7	6.57	2.6
2005	65.4	31.8	4.3	-7.5	5.73	-12.8
2006	77.6	18.6	4.3	0.5	5.59	-2.5
2007	80.6	3.8	4.6	6.5	5.92	5.9
2008	82.0	1.7	4.7	3.7	7.34	24.1
2009	70.3	-14.2	4.7	-0.8	7.11	-3.1

Source: Author's calculations based on the data from Turkish Statistical Institute.

Although the change in import price of miscellaneous edible products was 188.1% by national currency in 1994, it was 6.3% by foreign currency. In other words, such an increase in import price was mostly caused by the change in exchange rate. In addition, import quantity of this group decreased by 10.2% in 1994 compared to former year. Moreover, there was a similar situation in 2001. While import quantity of miscellaneous edible products decreased by 12.5% in 2001 compared to previous year, import price by national currency increased by 104.7%.

CHAPTER 7

INTERNATIONAL AGREEMENTS AND
AGRICULTURAL IMPORTS

7.1. Turkey's Agricultural Foreign Trade with the EU and Preferential Trade Regime

The EU has a central role in Turkey's agricultural foreign trade. The share of the EU in total agricultural exports accounted for nearly 48% of total agricultural exports of Turkey in the 1993-2009 period. Moreover, the EU constituted nearly 41% of total agricultural imports of Turkey within the same periods. In particular, Turkey's agricultural foreign trade with the EU started to increase in 2001 and reached a peak in 2008. While imports from the EU decreased about 25% compared to the previous year in 2009, exports to the EU decreased about 11%.

Table 7.1: Turkey's Agricultural Foreign Trade with the EU (USD million)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Import	937	895	1714	1725	1623	1352	1114	1230	1029	1366	1658	1849	2097	2519	2865	4138	3118
Export	1716	1931	2396	2369	2547	2365	2225	1787	1929	1939	2524	3279	4290	4100	4611	5191	4624

Source: Author's calculations based on the data from Turkish Statistical Institute.

As it can be seen from Table 7.1, agricultural imports into Turkey from the EU increased from 937 million Dollars in 1993 to 3.1 billion Dollars in 2009. During the same periods, agricultural exports to the EU from Turkey increased from 1.7 billion Dollars to 4.6 billion Dollars.[31] Turkey's most imported agricultural products from the EU were animal and vegetable oils. It was followed by raw hides, cereals and cotton. In 2009, while the share of

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[31] Shares of Products in Total Agricultural Imports from the EU can be looked also at Appendix C.1.

animal and vegetable oil was 35.1% in total agricultural imports from the EU, the share of cereal and cotton were 9.4% and 7.9%, respectively.

On the other hand, Turkey's most exported agricultural products to the EU were fruits[32]. In the 1993-2009 period, export of fruits to the EU was 36% on average of total agricultural exports to the EU. Furthermore, preparations of vegetables and fruits, animal and vegetable oil and vegetables were the other main groups. In 2009, they together constituted almost 37% of total agricultural exports to the EU.

Figure 7.1: Agricultural Imports from the EU and Share of the EU in Total Agricultural Imports of Turkey (USD million)
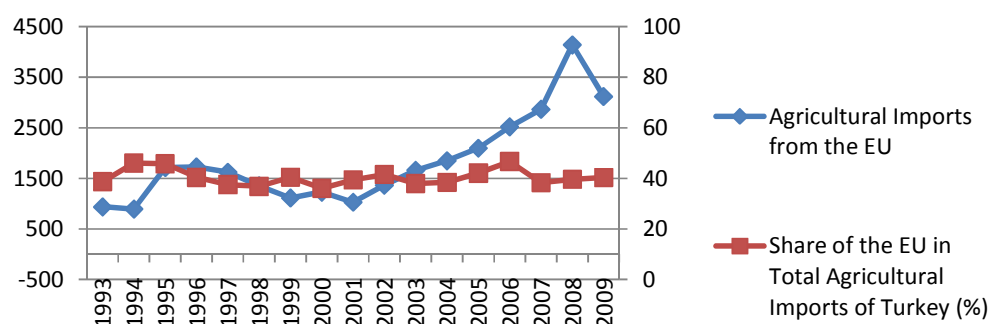
Source: Author's calculations based on the data from Turkish Statistical Institute.

Figure 7.2: Agricultural Exports to the EU and Share of the EU in Total Agricultural Exports of Turkey (USD million)
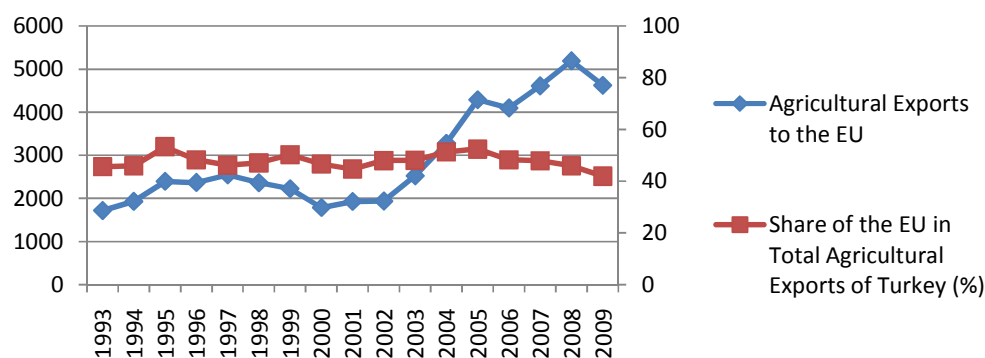
Source: Author's calculations based on the data from Turkish Statistical Institute.

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[32] Shares of Products in Total Agricultural Exports to the EU can be looked also at Appendix C.2.

Table 7.2: Shares of Products in Total Agricultural Imports from the EU

Products	1993	1995	1997	1999	2001	2003	2005	2007	2009
Live animals	4.4	12.9	0.6	1.3	1.0	0.3	0.5	0.5	0.6
Meat and meat pre.	3.2	4.0	0.03	0.01	0.00	0.01	0.00	0.00	0.01
Dairy products	1.7	1.4	1.3	2.6	1.2	2.0	1.9	1.4	1.5
Cereals	9.5	3.4	6.6	6.7	2.3	6.8	2.4	7.3	9.4
Oil seeds	1.8	1.4	2.1	2.9	2.1	2.2	3.2	10.3	7.5
Animal and Vegetable oil	43.8	37.3	34.7	38.2	30.5	29.9	34.5	27.8	35.1
Miscellaneous edible products	1.9	1.9	3.9	6.9	7.7	7.0	10.1	9.9	7.3
Residues and waste from food ind.	1.6	1.2	1.0	2.0	1.7	1.5	2.0	2.9	2.8
Raw hides	18.5	16.7	22.3	9.6	22.1	20.9	13.1	11.8	4.8
Raw skins	1.2	1.5	4.8	1.8	7.4	5.3	2.9	2.6	0.9
Raw cotton	1.5	3.5	9.5	11.0	11.0	7.9	8.2	4.4	7.9

Source: Author's calculations based on the data from Turkish Statistical Institute.

Table 7.3: Shares of Products in Total Agricultural Exports to the EU

Products	1993	1995	1997	1999	2001	2003	2005	2007	2009
Live animals	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Meat and meat preparations	0.05	0.03	0.04	0.04	0.04	0.05	0.04	0.04	0.04
Fish and fish preparations	1.8	1.4	1.9	2.1	2.0	3.8	2.9	4.4	4.6
Vegetables	6.9	6.7	5.1	4.5	5.5	6.7	5.5	7.7	9.0
Fruits	37.7	38.8	37.4	36.1	39.5	33.0	38.8	34.8	34.8
Products of the milling industry	1.4	1.1	1.7	1.4	1.1	0.7	1.0	0.9	0.7
Animal and Vegetable oil	15.7	19.7	15.7	14.9	12.2	13.8	11.7	8.7	11.1
Sugar and sugar preparations	1.3	0.4	0.7	1.0	1.4	1.4	1.5	2.3	2.2
Pre. of Vegetables and Fruits	13.1	15.4	16.2	17.2	18.4	17.6	1.4	20.2	17.1
Tobacco and tobacco pre.	7.5	5.1	7.6	8.4	5.0	5.7	5.5	4.9	4.6
Raw skins	1.2	1.6	1.5	1.7	1.5	2.1	1.4	1.6	0.9

Source: Author's calculations based on the data from Turkish Statistical Institute.

As has already been shown the EU is Turkey's most important trade partner in agricultural foreign trade. Turkey has had a customs union with the EU since 1996. However, agricultural trade remains outside the customs union in practice. The trade partnership relation of agricultural products between Turkey and the EU is based on the Ankara Agreement signed in 1963 and it was developed by Turkey-EU Association Council Decisions. First of all, the EU made some unilateral concessions in agricultural products to Turkey with Ankara Agreement. On the other side, Turkey started to apply preferential regime within the frame of import regime on limited product group (some dairy products, wine, fish preparations, etc.) in 1993 (Undersecretariat for Foreign Trade (DTM), 2010b).

In order to take into account of certain problems following enlargement of the Community in 1995 and the implementation of the Uruguay Round Agreement, the resolution of the 1/95 of the Association Council considered it necessary to start negotiations concerning the granting of reciprocal concessions on agricultural products. At the end of the discussions, which were completed in 1997, out of some exceptions, ad valorem duties on imports of all agricultural products from Turkey to the Community were eliminated in 1998 of the Association Council (DTM, 2010b).

Owing to enlargement of the EU, Free Trade Agreements between Turkey and 8 new member countries were abolished in 2004. The Community and Turkey held consultations and agreed the preferential trade regime to take account of the recent enlargement of the Community in 2006 and Decision No 1/98 was amended. As a conclusion, the preferential trade regime between Turkey and the EU took its final form with Decision No 2/2006 of the EC-Turkey Association Council (DTM, 2010b).

In this part of the study, the importation into Turkey of agricultural products originating in the EU will be analyzed by regarding Decisions 1/98 and 2/2006 Association Councils. As has already been mentioned in other

chapters, Turkey cannot import live animals and meat and meat preparations because of import prohibition after BSE disease from 1996. As a result, concessions about live animals and meat and meat preparations have not been put into practice. On the other hand, the Protocol does not constitute all of the agricultural product groups. For instance, raw hides, raw cotton, miscellaneous edible product groups, which have important shares in total agricultural imports of Turkey from the EU, does not situate in the Protocol. As has already been shown Turkey's most imported agricultural products were animal and vegetable oil and cereals from the EU. Regarding 1/98 and 2/2006 Association Council decisions, it is seen that apart from these two groups, the concessions about residues and wastes from food industry may possibly be another product group that should be analyzed. So, analyzing the preferential trade regime on these three groups would illustrate a good picture.

Cereals

According to the Decision of 1/98 Association Council, cereals group is divided into six sub-groups as durum wheat, wheat, rye, barley, maize and semi-milled or wholly milled rice. For importation of all these six sub-groups into Turkey from the EU, reduction of the MFN (Most-Favoured-Nation) Duty by 100% carried out. However, different quota practices are applied to each sub-group. Together with Decision of 2/2006 Association Council oats are added to this list but, reduction of the MFN Duty of this product is determined as 50%.

In the 1995-2009 period, wheat (other than durum wheat) was the most imported cereal from the EU, except in 2005 and 2006. Turkey's wheat (other than durum wheat) imports from the EU were more than the average in 1999-2003 period. However, Turkey's total wheat (other than durum wheat) imports decreased by 93% from 2003 to 2005. Meanwhile, the share of the EU in total wheat (other than durum wheat) imports of Turkey decreased

from 23.4% to 2.5%[33]. After this period, the share of the wheat imports from the EU came back its average percentage.

Table 7.4: Cereals Imports of Turkey from the EU (Thousand Tons)

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Durum Wheat	49.8	22.8	20.7	0.0	12.7	6.9	5.3	14.1	3.5	20.4	0.03	0.1	86.5	90.3	94.1
Wheat	200.4	427.9	481.1	164.2	234.0	309.3	82.8	216.6	429.6	88.8	3.4	0.3	276.5	678.7	624.1
Rye	0.0	0.0	0.0	0.0	115.9	42.9	0.0	17.8	30.3	16.0	55.7	0.0	18.0	0.0	0.0
Barley	43.5	31.0	17.7	100.2	42.8	30.7	34.1	16.8	89.4	14.1	51.5	65.9	51.7	78.7	80.2
Maize	0.0	8.6	23.1	11.4	22.3	31.4	0.0	0.0	21.3	68.3	31.7	0.2	190.5	20.3	103.4
Rice	7.6	3.2	18.2	34.5	33.3	34.2	5.1	14.0	23.4	26.3	32.3	13.0	28.7	50.3	9.3
Oats*	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.04	0.0	3.01	0.0	0.0	7.60	0.12	0.0

Source: Author's calculations based on the data from Turkish Statistical Institute.

For durum wheat, there was an unusual decrease in 1998 and 2006. The share of the USA was 92% in total durum wheat imports of Turkey in 1998 and Iraq constituted almost 97% of total durum wheat imports of Turkey in 2006. According to the FAO statistics production quantities of durum wheat of the EU did not change too much. So, the variation of the share of the EU might be caused by import prices. Since import prices of durum wheat were very low in the USA and Iraq compared to the EU in these years, almost all the Turkish demand for durum wheat was supplied by these countries. However, apart from these years, the EU became the main supplier of durum wheat imports of Turkey. Consequently, for durum wheat, it can be concluded that the reduction in MFN Duty had been successful.

As for cereal importation from the EU, barley ranks second after wheat. After the 1998 Protocol, the share of barley imports of the EU increased. However, an unexpected decrease occurred in 2004 and 2008. The production quantities of barley of the EU did not vary too much. On the other hand, the import price of barley of the EU was on average. Thus, barley was another success of the preferential regime.

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[33] Share of the EU in total Cereal Imports of Turkey can be looked at Appendix D.1.

Rye followed barley as the third highest import cereal. As it can be seen from the Table 7.3, there occurred an important increase after the Protocol.

While all of the Turkey's rye import demand was supplied by the EU in some years, there were not any rye imports from the EU in some years. Since Turkey's rye imports have a little share in total cereal imports, failure of this sub-group import is not cause for concern.

Animal and Vegetable Oil

Animal and vegetable oil was one of the most important agricultural products in total agricultural imports of Turkey in 1993-2009 period. In Decision of 1/98 Association Council, this group was divided into five sub-groups as fats of bovine animals, sheep or goats, soya bean crude oil, refined soya oil, sunflower crude oil and rape and colza oil. While importation of refined soya oil reduction of the MFN duty was 50%, others have 100% reduction. In this group, the share of soybean crude oil, fats of bovine animals and sunflower crude oil were 97% on average. Thus, other products had negligible shares in total animal and vegetable oil imports.

Table 7.5: Animal and Vegetable Oil Imports of Turkey from the EU (Thousand Tons)

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Fats of bovine animals	9.3	8.2	11.3	43.7	9.6	7.6	1.0	0.0	0.0	0.1	0.0	0.5	1.0	0.0	0.0
Soybean crude oil	83.2	59.0	119.5	114.9	137.8	112.4	79.1	88.5	91.9	67.9	90.5	26.7	11.9	5.1	1.0
Refined soya oil	0.3	0.8	0.0	0.2	0.3	1.3	0.0	0.001	1.0	0.001	0.000	0.002	0.000	0.002	0.001
Sun-flower crude oil	49.0	1.9	25.6	12.4	4.1	3.0	7.5	6.4	0.0	0.0	1.3	0.0	17.1	2.4	323.6
Rape and colza oil	9.4	11.5	1.6	12.3	21.7	38.7	10.7	15.1	8.1	3.0	8.4	0.0	0.4	10.3	0.2

Source: Author's calculations based on the data from Turkish Statistical Institute.

Fats of bovine animals, sheep or goats sub-group was a failure of the Protocol. Although the share of the EU in fats of bovine animals, sheep or

goats imports of Turkey increased from 26% in 1998 to 50% in 1999, the share decreased to nearly zero after 2001[34]. Unfortunately, the production data of these product's of the EU could not be found but according to foreign trade data, the import price of the USA, which was the major country in this product's imports of Turkey, was nearly half of the import price of the EU. Thus, it most likely to be the reason for the failure of the Protocol.

Although the share of soya bean crude oil of the EU increased after the Protocol, the share of the EU decreased too much especially after 2004. Since quota was exceeded for all years, quota limit could not explain these decreases in imports of soya bean crude oil. Soya bean crude oil is another product for which the protocol targets have failed.

Sunflower crude oil was the biggest disappointment concerning the Protocol. While the EU took the highest share in 2007 with 10.6%, there was not any sunflower crude oil importation from the EU in 2003 and 2006.

Despite refined soya bean oil and rape and colza oil had negligible shares in total of this five sub-groups, Protocol had the biggest success in these sub-groups. In 1999-2008 period, nearly all the rape and colza or mustard oil import was supplied by the EU, except 2006. Because import price of this product from the EU was very high compared to prices from the other countries, there was not any importation from the EU in 2006.

After the protocol, nearly all of the soybean refined oil import demand of Turkey was supplied by the EU, except in the 2005-2007 period. Turkey did not import any soybean refined oil in 2007. Thus, this group of importation has developed in line with the Protocol.

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[34] Share of the EU in total Animal and Vegetable Imports of Turkey can be looked at Appendix D.2.

Residues and Wastes from Food Industry

"Residues and wastes from food industry" imports increased by 4 times by quantity between 1998 and 2008. In this period, residues of soya bean oil constituted almost 41% of total residues and wastes from food industry imports of Turkey. According to the Decision of 1/98 Association Council, this group divided into four sub-group as flour meal and pellets of meat and fish, residues from soya bean oil, dog or cat food and other preparations of a kind used in animal feeding. In these four sub-groups, the most imported group was residues of soya bean oil with a share of almost 83%.

Table 7.6: Residues and Wastes from Food Industry Imports of Turkey from the EU (Thousand Tons)

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Flours, meals and pellets	26.3	35.5	49.6	42.0	58.9	30.7	36.4	14.7	20.1	50.5	39.6	51.1	57.8	56.0	52.9
Residues from Soybean oil	216.7	348.0	367.3	390.3	520.5	539.3	377.6	379.8	413.0	466.0	511.9	268.7	341.5	359.6	351.8
Dog or cat food	2.0	2.5	3.4	4.0	5.3	5.8	4.9	6.0	7.9	10.5	12.4	14.5	16.5	20.6	19.7
Other pre. in animal feeding	14.1	12.1	11.8	12.2	15.9	17.9	13.4	20.9	20.3	32.0	29.8	41.5	41.8	48.1	37.4

Source: Author's calculations based on the data from Turkish Statistical Institute.

For importation of all these four sub-groups, 100% MFN Duty reduction have been carried out since 1998. While there is not any quota limit for flour and pellets of meat and fish and residues of soya bean oil, quota limit are applied for dog or cat food and for other preparations of a kind used in animal feeding, by 1000 tones and 6000 tones, respectively.

Residues of soya bean oil group is a failure of the Protocol. The share of imports of this group of the EU was 1.88% at most[35]. When quantities are considered, quota was not exceeded, except in 2009. In addition, flour and

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[35] Share of the EU in total Residues and Wastes from Food Industry Imports of Turkey can be looked at Appendix D.3.

pellets of meat and fish group is another failure of the Protocol. Although there was an important increase in the share of the EU in 2000, it was a temporary increase.

After the Protocol, dog or cat food importation from the EU increased continually, except in 2002 (after the devaluation). This sub-group's import quantity exceeded the quota in most of the years. In 2009, nearly 12000 tons dog or cat food was imported from the EU, which constituted 60% of total residues and wastes imports. Thus, this sub group can be accepted as a success of the Protocol.

There was an increasing trend for other preparations of a kind used in animal feeding sub-group after the Protocol. Tariff quota of 6000 tones was always exceeded. In 2008, Turkey's imports of this sub-group from the EU reached almost 70 million Dollars. It can be concluded that the reduction in MFN Duty was effective.

As a conclusion, it is apparent that the Preferential Trade Regime seems to have been successful for cereal group. However, the same cannot be said for animal and vegetable oil and residues and wastes from food industry. Although they are the most imported agricultural products from the EU, these three groups constitute only half of the monetary amount of importation from the EU. Thus, a healthy conclusion requires analysis of all product groups. However, considering the possibility of Turkey's membership to the EU, failure of the Preferential Trade Regime in animal and vegetable oil and residues and wastes from food industry is thought-provoking. The membership will involve full liberalization of agricultural trade with the EU. Thus, the possible results of the abolition of trade barriers between EU and Turkey in agriculture have an outmost importance for Turkey's agricultural foreign trade.

Çakmak and Kasnakoğlu (2002), summarized possible overall results of the membership to the EU compared with non-member situation as follows:

- "The price level of crop products increases. However, the overall prices decline due to high decrease in the prices of livestock products.
- Farmers may suffer from the membership, except the producers of some special crops.
- Increased consumption will be realized with a lower level of expenditure. The expenditure for basic food decreases.
- Livestock products are not competitive even at the EU prices. Herd size contacts and net imports boom.
- The increase in the net exports of crop products is far from compensating the change in the net imports of livestock products.
- All imports of livestock products are from EU. Exports of crop products to the rest of the world increase slightly, yet the volume of trade with EU expand significantly.
- Barley, cotton, pulses, vegetables and fruits appear to be competitive at the potential level of prices.
- The compensatory area payments compensate more of the effects of decline in production due to the set-aside requirements.
- Even slight improvement in livestock production technology may increase the resistance of the sector against EU livestock products."

Eruygur (2006), evaluate the impact of Turkish integration to the EU on agriculture using an agricultural sector model for Turkey. The results of the Eruygur (2006) are almost identical with the results of the Çakmak and Kasnakoğlu (2002). It is stated that, membership to the EU causes Turkey to become a significant net importer in total agricultural products. The net exports of crops declines and cannot balance the boom in net imports of livestock products. Overall welfare affect is small. Consumers benefit from declining prices. Common Agricultural Policy (CAP) supports are determinative for the welfare of producers. Additionally, compared with the

results of Çakmak and Kasnakoğlu (2002), it is seen that there is an improvement in the competitiveness of livestock sector due to the increase in their yields experienced in the recent years.

The effects of liberalization are bound to depend on the path of agricultural policies in Turkey and in the EU during the accession negotiations. On the other side, agricultural protection continues to be the most controversial issue in global trade negotiations (Eruygur, 2006). Consequently, Turkey's membership to the WTO is another external factor which effects Turkey's agricultural foreign trade. Analyzing the effects and potential effects of the WTO agreement is also crucial to discuss Turkey's agricultural policy options in relation to future prospects i.e., adjustment to the new agreement.

7.2 WTO - Agreement on Agriculture and Agricultural Imports of Turkey

7.2.1 The Agreement on Agriculture

The Agreement on Agriculture is an international treaty of the World Trade Organization. It was negotiated during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) and brought into force with the establishment of the WTO on January 1, 1995. WTO member governments agreed to improve market access and reduce trade-distorting subsidies in agriculture. In general, these commitments were phased in over six years from 1995 (10 years for developing countries). In addition to that, members also agreed to continue new negotiations after the implementation period. The Agricultural Agreement has three central concepts or "pillars": market access, export subsidies and domestic support.

Market access is the first pillar of the Agricultural Agreement and refers to the reduction of tariff barriers to trade by WTO members. Before the Uruguay Round, some agricultural imports are restricted by quotas and other non-tariff measures. According to this new system, these are all removed and converted into ordinary custom duties. This is called tariffication. After

determination of new tariff level, Uruguay Round participants agreed that developed countries would cut the tariffs (the higher-out of quota rates in the case of tariff quotas) by an average of 36%, in equal steps for six years. Developing countries would make 24% cuts over 10 years. The least developed countries do not have to cut their tariffs. Meanwhile, the Agreement brings Special Safeguard Provisions to members who converted non-tariff restrictions into ordinary customs duty in order to prevent rapidly falling prices or surges in imports from hurting their farmers (WTO, 2010b).

The second pillar of the Agricultural Agreement is export subsidies. The agreement requires WTO members to cut the both the amount of money they spend on export subsidies and the quantities of exports that receive subsidies. For the reduction subsidies in export subsidy, developed countries would make a reduction on their export subsidies by 36% in value and 21% in volume over the average total subsidies of 1986-1990. On the other hand, developing countries would make reduction by 24% in value and 14% in volume in 10 years. Again, least developed countries are exempt from any reduction. Moreover, during the six year implementation period, developing countries are allowed under certain conditions to reduce the costs of marketing and transporting exports (WTO, 2010b).

Domestic support is the third pillar of the Agricultural Agreement. According to the agreement, all domestic support measurement except those with "no or at most minimal, trade distorting effects or effects on production" are subject to reduction commitment. The commitments are expressed in terms of Total Aggregate Measurement of Support (AMS) and Annual and Final Bound Commitment Levels. Developed countries agreed to reduce total AMS by 20% over six years. Developing countries agreed to make 13% cuts over ten years. Least developed countries do not need to make any cuts (WTO, 2010b).

The Agricultural Agreement structures domestic supports into three categories or "boxes": a Green Box, an Amber Box and a Blue Box. The Green Box contains fixed payments to producers for environmental programs, as long as the payments are "decoupled" from current production levels. The Amber Box supports are taken to be trade-distorting and have effect on production, such as input subsidies and price supports. The governments have agreed to reduce those supports but not eliminate. The Blue Box contains subsidies which can be increased without limit, as long as payments are linked to production limiting programs. While calculating AMS, total amount subject to reduction commitment, only Amber box supports are taken into account. Other two types of supports can be used freely. The Agreement also determines "de minimis" percentage which is 5% of the value of member's total agricultural production for developed countries and 10% for developing countries (WTO, 2010c).

The Agricultural Agreement is a framework of the first phase of the reform process. Since reform is an on-going process, the Agreement mandated new negotiations. The Doha Development Round is the current trade negotiation of the WTO which started in November 2001. The main aim of the new negotiation is to bring agricultural trade to further liberalization by making further substantial reduction in tariffs, domestic supports and export subsidies. In order to reach a successful result, the Doha Declaration mandated that formulas and modalities of countries' commitments would be completed by 2003 at the Cancun Conference. However, after a set of meetings members failed to reach a consensus.

After the Cancun Conference ended in deadlock, the negotiators in Geneva were able to concentrate on moving forward with the Doha Round. After intense negotiations in 30 July, 2004, WTO members reached what has become known as the "Framework Agreement" (July Package). Its objective is to constitute basic structure, which allows countries to increase trade globally. For this purpose, the Framework Agreement deals with reduction of

trade-distorting domestic supports and abolish all forms of export subsidies, which cause to unfair competition, in the end of the determined period. Moreover, the Framework 2004 committed members to substantial improvements in market access for all products (deeper cuts in higher tariffs with flexibilities for sensitive products). For developing countries, two important conveniences were provided. Firstly, developing country members will have the flexibility to designate an appropriate number of products as Special Products, based on criteria of food security, livelihood security and rural development needs. Secondly, a Special Safeguard Mechanism will be established for use by developing country members. Furthermore, it is agreed that reduction in de minimis will be negotiated taking into account the principle of special and differential treatment (WTO, 2004). This stage will therefore determine the final shape of the negotiations' final outcome.

Since then, ministerial discussions have taken place in Hong Kong in 2005 and Geneva in 2006 and 2008. As of 2008, talks have again collapsed over unresolved differences between the developed nations led by the EU, the USA and Japan and the major developing countries led by India, Brazil, China and South Africa (DTM; 2009). The most recent round of negotiations took place in Geneva in 2 November 2010. However, these negotiations did not result in any progress (WTO, 2010e).

7.2.2 The Effects of the Agricultural Agreement on Agricultural Imports of Turkey

Turkey signed the GATT in 1951 and became a party to the agreement. With the establishment of the World Trade Organization, Turkey automatically became a founding member of the organization. Turkey makes regulations on its domestic laws according to the requirements of the WTO negotiations (DTM, 2008). Obviously, market access mostly related to agricultural import of Turkey among the Agricultural Agreement's three pillars. However, brief information will also be given about the impacts of export subsidies and domestic supports on Turkey's agricultural products.

7.2.2.1 The Impact on Turkey's Export Subsidies

As a developing country Turkey, promised to implement limits on exports subsidies as outlined in the WTO Agricultural Agreement. Turkey has promised to limit export subsidy to 44 products and not to apply export subsidy to any other products. Since 1996, Turkey has been faithful to the WTO's agreements. Table 7.7 shows Turkey's export subsidy commitments in some selected agricultural products. Wheat, barley and wheat flour are the most important products of the export subsidy commitments. Thus, this self-possessed behavior saved time to sell public stocks. However, sugar cannot be exported with subsidy because it does not locate in the list (Akder, Çakmak; 2005:68).

Turkey does not have an adequate budget opportunity to give more subsidies to agricultural exports. Thus, Turkey does not experience any problem in the implementation of the WTO Agricultural Agreement commitments regarding export subsidy.

Table 7.7: Export Subsidy Commitments of Turkey in Selected Agricultural Products

Products	Outlay Commitments (1000 Dollars)		Quantity Commitments (1000 tonnes)	
	1995	2004	1995	2004
Wheat	640.424.3	27.418.5	2.124.8	493.8
Barley	123.259.9	4.737.7	747.5	113.1
Wheat Flour	9.542.7	1.439.7	475.4	56.2
Semolina	1.983.6	1.544.6	67.7	58.3
Malt	2.155.0	1.678.1	38.5	33.6
Olive oil	2.284.3	1.778.8	23.1	20.1
Sun-flower oil (refined)	2.886.5	2.377.5	94.5	62.1
Maize oil (refined)	768.7	598.6	12.9	11.3
Margarine	4.915.4	2.781.9	99.1	62.9
Sausages and similar products	20.6	16.0	0.064	0.056
Other prepared meat	22.0	17.1	0.079	0.069
Biscuits, pastry	2.551.1	2.111.4	24.1	16.7
Macaroni vermicelli	3.341.4	941.5	44.6	14.2

Source: WTO Notifications: http://www.wto.org/english/thewto_e/countries_e/turkey_e.htm.

Since Turkey's export subsidy to agricultural products became very low with commitments, abolishment of all the export subsidies will not affect Turkey negatively. Moreover, such a situation will avail of Turkey because export subsidies mostly given by developed countries (Akder and Çakmak; 2005:68).

7.2.2.2 The Impact on Turkey's Domestic Support

Since the expense of domestic support of agriculture in Turkey is under 10% out of the total volume of agricultural production, domestic support enters into the conditions of "de minimis". In order not to have to apply any reductions, Turkey prefers stay within the de minimis range and not to pass over ten percent of the domestic support limitation (DTM, 2006a).

According to the Agricultural Agreement, investment and input supports can be applied by developing countries yet, since 2001, Turkey has not applied input supports. Moreover, as offered by the WTO, Turkey started to apply direct payment to farmers instead of price support. Although its implementation period was from 2001 to the end of 2008 countrywide, direct payments still continue with some modifications.

7.2.2.3 The Impact on Turkey's Market Access

Like other developing countries, Turkey promised to apply a 10% reduction in tariffs for each of its agricultural products and a 24% reduction in tariffs for its total agricultural products. However, Turkey protects its sensitive products (meat, dairy, sugar and wheat) by reduced but still quiet high tariffs. Moreover, the Special Self-guard Mechanism allows Turkey to protect its producers (DTM, 2006). Although Turkey implemented all of the tariff reductions on agricultural products as required by the WTO, it is not completely tarifficated. One of the reasons of this, Turkey has applied liberalization since 1980. Moreover, new products, which were not defined in 1986, were emerged. In addition to these, the Free Trade Agreement with the

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EU gives some help to Turkey to conform easily to WTO's rule (DTM, 2006a).

As it can be seen from the Table 7.8, Turkey has employed high custom taxes to meat and meat preparation, dairy products, cereals, sugar and tobacco. By this way, Turkey seeks to protect its domestic producers and provide security to its domestic food sector. On the other hand, Turkey has preferred low tariff rates in net imported products and raw materials of the export sector. For instance, vegetable oil, oil seeds, residues and wastes from food industry and cotton.

Table 7.8: Turkey's Tariff Rate Commitments for the Agreement on Agriculture (%)

Tariff No	Product Group	1986 Tariff Rates (Base year)	2004 Tariff Rates (Max)	Average Tariff Reduction
01	Live animals	43.5	37.6	13.6
02	Meat and meat pre.	195.1	175.3	10.1
04	Dairy products	131.5	117.2	10.9
05	Edible products of animal origin	21.0	10.6	49.5
06	Live plants	33.0	28.8	12.7
07	Vegetables	35.6	30.0	15.7
08	Fruits	64.1	53.4	16.7
09	Coffee, tea, spices	85.3	56.8	33.4
10	Cereals	161.1	145.0	10.0
11	Products of the milling industry	50.4	43.3	14.1
12	Oil seeds	34.1	22.1	35.2
13	Lacks, gums, resins	59.5	29.7	50.1
14	Vegetable plaiting products	41.3	16.9	59.1
15	Animal and vegetable oil	40.6	29.4	27.6
16	Meat and edible meat offal pre.	90.3	82.1	9.1
17	Sugar and sugar pre.	113.1	90.7	19.8
18	Cocoa and cocoa pre.	69.2	51.0	26.3
19	Preparations of cereals, flour, starch	64.1	55.4	13.6
20	Pre. of vegetables and fruits	73.8	59.6	19.2
21	Miscellaneous edible pro.	70.5	51.4	27.1
22	Beverages	87.6	70.7	19.3
23	Residues and wastes from food ind.	11.3	10.0	11.5
24	Tobacco and tobacco pre.	150.0	113.1	24.6
5201	Cotton, raw	10.0	6.0	40.0
5202	Cotton, waste	20.0	12.0	40.0
5203	Cotton, combed	20.0	12.6	37.0

Source: Çakmak, E. & Akder, H. (1999) DTÖ TARIM ANLAŞMASI'NIN YENİ GÖRÜŞME DÖNEMİ VE TÜRKİYE-OLANAKLAR, KISITLAR VE STRATEJİLER.

Table 7.9: Agricultural Imports of Turkey by Product Groups and Share of the Product Groups in Total Agricultural Imports of Turkey, 1995 and 2004

Tariff No	Product Group	1995 Import (Million Dollars)	1995 % of Total Agricultural Products	2004 Import (Million Dollars)	2004 % of Total Agricultural Products
1	Live animals	343.0	9.2	9.8	0.20
2	Meat and meat pre.	77.0	2.1	0.3	0.01
4	Dairy products	35.2	0.9	68.8	1.43
5	Edible products of animal origin	12.7	0.3	31.9	0.66
6	Live plants	10.0	0.3	23.5	0.49
7	Vegetables	27.2	0.7	32.9	0.68
8	Fruits	47.5	1.3	99.1	2.06
9	Coffee, tea, spices	39.5	1.1	30.5	0.63
10	Cereals	454.7	12.1	520.6	10.82
11	Products of the milling industry	4.4	0.1	12.0	0.25
12	Oil seeds	237.0	6.3	530.5	11.03
13	Lacks, gums, resins	9.7	0.3	41.3	0.86
14	Vegetable plaiting products	3.0	0.1	3.7	0.08
15	Animal and vegetable oil	639.9	17.1	511.2	10.63
16	Meat and edible meat offal preparations	2.1	0.1	1.0	0.02
17	Sugar and sugar pre.	202.5	5.4	37.5	0.78
18	Cocoa and cocoa preparations	49.0	1.3	218.4	4.54
19	Preparations of cereals, flour, starch	13.4	0.4	66.9	1.39
20	Pre. of vegetables and fruits	11.1	0.3	25.4	0.53
21	Miscellaneous edible products	36.1	1.0	228.2	4.74
22	Beverages	16.2	0.4	49.0	1.02
23	Residues and wastes from food industry	101.1	2.7	401.4	8.35
24	Tobacco and tobacco pre.	160.0	4.3	239.3	4.97
52	Cotton	383.1	10.2	844.1	17.55

Source: Author's calculations based on data from Turkish Statistical Institute.

Table 7.9 shows that the shares of the meat and meat preparations, cereals and sugar in total imports of Turkey decreased between 1995 and 2004. Moreover, the shares of dairy products and tobacco remained almost same. On the other hand, the shares of the oil seeds, residues and wastes from food industry group and cotton in total imports increased between the same periods. So, employment of the low tariff rates in the frame of the WTO commitments made importation of these products more attractive.

It is quite clear that the Agricultural Agreement designed to create a competitive market for agricultural products by eliminating the distortion in trade. For this purpose, the Doha Round Negotiations continue with a renewed effort both on formal and informal meetings. Yet, until the new WTO Agreement on Agriculture is concluded, old commitments will be valid. Therefore, Turkey needs to be cautious about its obligations regarding agricultural policies. Moreover, assessing the potential effects of a new WTO agreement is crucial both to determine the attitude of Turkey during negotiations and to design necessary agricultural policies for the impacts (Eruygur, 2006).

In the case of market access, as tariffs are the only instruments to sustain agricultural protection in Turkey, it is expected to have a gradual liberalization process and S&D flexibilities to minimize the possible negative effects of liberalization. Hence, Turkey attaches great importance to the concepts of Special Products and Special Safeguard Mechanism. With regard to the trade distorting supports; Turkey strongly advocate that a fair agricultural trading environment requires the complete elimination of all kinds of export subsidies, as well as domestic supports that have a trade-distorting effect on the international markets (DTM, 2008).

When WTO–Agricultural Agreement will be renewed, there appeared only one important group, which has tariff space, as cereals. In sensitive and special product groups, it is expected that, meat, dairy products, banana and sugar will be mostly affected from tariff reductions (Akder and Çakmak, 2005).

Eruygur, (2006) analyze the possible impacts of a new WTO agreement on the Turkish agricultural sector. It is hypothesized that the new agreement will lead to a 15 percent reduction in all tariff line commitments of WTO members in agricultural products by 2015. This simulation shows that a 15 percent reduction in Turkey's WTO tariff commitments will increase net imports by

250 million Dollars. The largest expansion in net imports will likely be seen in meat. Moreover it is reported that with 15 percent reductions in tariff lines, the net imports of oil seeds, rice, and sugar beet will also enlarge and most of these imports will likely originate from the rest of the world.

According to the Economic Policy Research Foundation's study on Turkey in 2008[36], there is an important difference between bound tariff rates and applied rates of wheat, mahlut, maize and barley, the effects of a reduction in tariff rates will be indirect. For rice, even a small reduction of the tariff rates could cause an increase in the world price; continuity of domestic rice production could get hard. Moreover, Turkey's net importer position in oil seeds will continue. As a result of domestic support and export subsidy decreases of developed countries, world prices of cotton will increase. Thus, the cost of imports and domestic production will increase in Turkey. Two of the most affected agricultural products from tariff reductions will be tea and sugar. It is crucial to treat these as sensitive or special products. On the other hand, red meat will be mostly affected from tariff reductions. The concepts of sensitive and special products are very important for these products' production, continuity of production and food security. Together with reduction or abolition of domestic supports and export subsidies in major producer countries, high cost of production in Turkey may not balance of exports and imports. White meat will be affected from reductions less than red meat. However, high world prices will give major exporter countries an opportunity to export more and Turkey, whose tariff rates will decrease, will become more open to white meat import. For dairy products, bound tariff rates and applied rates are close to each other. They will be affected from the reduction of tariff rates negatively but from reduction of the domestic supports especially in the EU, positively.

Additionally, elimination of all forms of export subsidies provides more advantages than disadvantages to Turkey. Since some developed countries

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[36] Dünya Ticaret Örgütü Doha Turu Çok Taraflı Ticaret Müzakereleri ve Türkiye, TEPAV, 2008

have implemented high export subsidies, this has resulted in extremely low world prices of agricultural products (Akder and Çakmak, 2005). It is important for Turkey to act with solidarity with other countries to insist on reductions of domestic supports by developed countries. The world price of necessities will increase because of the decrease of domestic supports and export subsidies. At the same time, while import cost of these products will increase, this situation may cause an increase in import substitution (TEPAV, 2008).

All these things show that, reduction in tariff rates of net imported products of Turkey such as meat, vegetable oil, oil seeds will facilitate Turkey's importation. It is obvious that sensitive and special products and special safeguard mechanism might become strategic tools that Turkey has to use in future.

While Turkey's initial situation was parallel to thinking of G-33, it is mentioned in the meeting of the WTO Coordination Committee[37], which was arranged by DTM, that Turkey is leaving from G-33 gradually. Especially, it was emphasized that Turkey's approach to the EU will be more advantageous because the protective approach about market access of the EU is critical for Turkey, too (DTM, 2006b). It has already been mentioned that the EU is clearly the closest partner of Turkey and the preferential trade regime on agricultural products has been applied between the EU and Turkey. Moreover, being a candidate member state in the EU, Turkey has to harmonize its agricultural policy to the EU's Common Agricultural Policy (CAP).

Considering all of these situations, Turkey both has to prepare itself to new WTO rules and harmonize its policy to the CAP. Since the late 1980's, policy makers in Turkey have preferred to support agriculture by prices instead of

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[37] "DTÖ ile Koordinasyon Kurulu V. Toplantısı", elektronik erişim: http://www.dtm.gov.tr/dtmweb/index.cfm?action=detay&yayinID=122&icerikID=224&dil=TR

investing to productivity increasing programs. These policies did not contribute to the productivity of Turkish agricultural sector. Consequently, although Turkey has rich natural and human resources, its agricultural sector never reaches its potential because of these increasingly inefficient agricultural policies implemented (Eruygur, 2006). Turkey has to cover the negative effects of reduction in protection and prices by reducing cost of production. It can be done by structural transformation, in other words such a transformation can increase competitiveness of Turkey (Akder, 2006).

Considering agricultural developments in the world, a new strategy for Turkey's agricultural policy has to be determined. If importation increase of Turkey is perceived as a bad situation, Turkey has to take some measures. Major steps that can be used to accomplish this change are technological development, improvement of productive resources and more market-friendly policy environment in agriculture (Eruygur, 2006). In Turkey, an effective research and development, communication, publication and education system need to be urgently constituted. Problems related to the agricultural marketing should be eliminated. Moreover, improvement of the institutional and physical infrastructure should be among the priorities of the agricultural sector. Together with such a strategy, an improvement in productivity can be achieved; so, undesirable effects of full membership of the EU and the tariff reductions by the WTO can be recovered.

CHAPTER 8

CONCLUSIONS

This thesis analyzed agricultural imports of Turkey for the period of 1993 - 2009. The main objective of this study was to describe the rapid increase in imports of agricultural products in Turkey. After the introductory chapter, the structure and development of foreign trade of agricultural products were analyzed. The analysis shows that, Turkey still has a foreign trade surplus after 1993. The share of agricultural products has decreased in total imports of Turkey in last 17 years but, while Turkey's population increased nearly 1.2 times, agricultural imports increased 3.2 times during the same period. In addition, per capita agricultural imports increased 2.6 times. The trade data has been presented by commodity and geographic distribution. One of the main results of the study for the commodity groups was that there was a product concentration in both agricultural imports and exports. While the share of first ten products in total agricultural imports of Turkey was about 66%, the share of first nine products in total agricultural exports of Turkey was about 64%. In the 1993-2009 period, the share of first 10 countries in total agricultural imports of Turkey was about 59% and the share of first ten countries in total agricultural exports of Turkey was about 62%. Thus, product concentration seems to be higher than geographic concentration in agricultural foreign trade. The EU (15) played a significant role in agricultural exports of Turkey. Moreover, the USA, together with the EU countries were the major importers of Turkey's agricultural products.

Chapter 3 was devoted to agricultural import price and quantity indexes. Turkey's agricultural import has been increasing continuously since 2001. Moreover, the results of this study showed that, more agricultural products can be imported with lower prices since 2001. In this chapter, for a more detailed view, agricultural products were separated as food and non-food products. It was concluded that non-food products can be imported cheaper

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from 2001 onwards. Turkey's most imported agricultural products were mostly non-food products, that were used as inputs for export products, this may be one of the most important reasons of the rapid increase of the agricultural imports of Turkey.

One of the major methods of import data interpretation is the estimation of import demand by econometric method. In Chapter 4, income and price elasticities of some agricultural products were estimated. The results of import demand models indicated that, although econometric analysis has an indispensable importance to determine the effects of explanatory variables, they may be misleading. Because of the inappropriateness of the data set which is used to explain the import demand of agricultural products as domestic prices of wheat, cotton etc., or per capita GDP of Turkey might cause unexpected price and income elasticities. On the other hand, it may be that some other explanatory variables, which cannot be accessed, should be added to the models. For these reasons, it is preferred to analyze major factors that give rise to agricultural imports also descriptively.

Alternative classifications such as "raw material versus processed" and "food versus non-food" products were presented in Chapter 5. The aggregate outlook of Turkey's agricultural products foreign trade for the 1993-2009 period showed that, Turkey was a net unprocessed products importer and a net processed products exporter. It was concluded that most of the unprocessed import products were raw materials by the export sector. Therefore, detailed analyzes were done for raw cotton, raw hide, animal and vegetable oil and cereals imports of Turkey in the second section of this chapter. The overall results of the analyze indicates that, export increase of the processed products as cotton textile and import increase of the raw material as raw cotton were simultaneous. On the other hand, it seemed that the decrease or insufficient increase of these products' domestic production and/or productivity was another reason of importation increase. According to food and non-food differentiation of agricultural products, Turkey was a net

food products exporter and a net non-food products importer. In respect of export, while food products had a 68.3% share in total agricultural exports of Turkey in 1993, it increased to 83% in 2009. On the other hand, in respect of import, while non-food products had a 71% share in total agricultural imports of Turkey in 1993, it decreased to 58.8% in 2009.

Among Turkey's agricultural imports, some products, which cannot be grown in Turkey, also exist. As long as the demand of these products increased, import also increased. According to the Turkish Statistical Institute's data, the products which cannot be grown domestically are coffee, cocoa, black pepper, banana, coconut, pineapples, mango, avocado, cashew nuts, palm oil and coconut oil. While the share of these products in Turkey's agricultural imports was 13.2% in 1993, it increased to 17% in 2009. Consequently, the increment in import value of them is another reason of rapid increase in imports of agricultural products.

Some explanatory variables' impact on agricultural import demand were analyzed in Chapter 6. These were "population", "income" and "exchange rate". In Turkey, population growth rate is decreasing. However, it is still high and this increases the demand for agricultural products. If agricultural production increase or productivity increase does not meet the demand of this population growth, it will lead to a decrease in net exports or to an increase in net imports. Population increase was expected to affect among others fruits, vegetables and tea consumption and their foreign trade. Thus, we analyzed impacts of population increase on some of the selected products by two different methods. Firstly, it was supposed that these products' production did not increase after 1993 but population and per capita consumption quantity were taken with their real values in 2009. Then, the deficient production quantity was calculated for the selected products. For the second calculation method to analyze the effect of population on import demand, it was supposed that population did not increase after 1993, in other words it was fixed in about 58 million and production and per capita

consumption quantities were taken with their real values in 2009. Then, the excess production quantity was calculated for the selected products. The overall results of the analysis indicated that, if production had not increased parallel to population and consumption increase, Turkey could have become a net importer country even in most important export products. If it is supposed that population had not increased, there would have been no necessity to import. Moreover, Turkey could have exported or could have increased exports of these products.

Second variable was income or growth. The growth in income is an important factor that may explain the increasing demand for food. Turkey is considered normally as self sufficient. However the diet is unbalanced. With the rise in income demand may increase considerable for certain products, especially for animal products. In this subchapter, Turkey's per capita GDP and per capita meat and dairy product consumption data were compared to the data of the other selected countries. It was concluded that, since Turkey's per capita GDP is lower than the other developed countries, Turkey's per capita meat, fish and dairy products consumption amounts are the smallest among them. Hence, there appeared a question that, if per capita meat and dairy products consumption of Turkey had been equal to that of the EU's, together with Turkey's existing production what would have been Turkey's deficient supply of these products. The results of the analysis showed that, if Turkey's cattle meat, chicken meat, cow milk and hen egg per capita consumption had been equal to the per capita consumption of the EU in 2009, Turkey would have to decrease its exports or increase imports or production of these products.

Third factor was price of food. Turkish Lira was overvalued for long periods after 1990's. We specifically looked at the years of devaluation 1994 and 2001 and compared traded quantities and prices before and after the devaluation. In the devaluation years, overvalued currency affected the import demand of all agricultural products. However, the changes in the

exchange rate appeared in some groups of agricultural products noticeably. We analyzed impact of exchange rate on import demand of oil seeds, residues and wastes from food industry and miscellaneous edible products. The results of the analysis showed that, the devaluation had a negative effect on import quantities of these product groups by increasing prices. Furthermore, the horizontal movement of exchange rate after 2001 also facilitated the imports of these products.

We discussed Turkey's agricultural import policy options in relation to future prospects i.e., adjustment to the Agreement of World Trade Organization and Turkey's prospects for EU full-membership in Chapter 7. The first section in this chapter represented Turkey's agricultural foreign trade with the EU and impacts of the Preferential Trade Regime. Protocol does not constitute all of the agricultural product groups. We selected the most imported agricultural products from the EU and analyzed impacts of the MFN duty reductions. The overall results indicated that, the Preferential Trade Regime seemed to have been successful for the cereal group. However, the same results could not be gained for animal and vegetable oil and residues and wastes from food industry. The membership will involve full liberalization of agricultural trade with the EU. Thus, the possible results of the abolition of trade barriers between the EU and Turkey in agriculture have an outmost importance for Turkey's agricultural imports. For the impacts of Turkish integration to the EU on agriculture, the studies of Çakmak and Kasnakoğlu (2002) and Eruygur (2006) were presented.

Turkey's membership to the WTO is another external factor which effects Turkey's agricultural foreign trade. Hence, the second section of Chapter 7 was devoted to the WTO – Agricultural Agreement and its impacts on agricultural import of Turkey. Especially, it was emphasized that, the Doha Round Negotiations continue with a renewed effort both on formal and informal meetings. So, assessing the potential effects of a new WTO agreement is crucial both to determine the attitude of Turkey during

negotiations and to design necessary agricultural policies for the impacts. It was concluded that, reduction in tariff rates of net imported products of Turkey such as meat, vegetable oil, oil seeds will facilitate Turkey's importation. It is obvious that sensitive and special products and special safeguard mechanism will be Turkey's most important tools. With regard to the future of the products as live animals, meat, dairy products, cereals, sugar, tea, tobacco, these tools will have strategic importance.

The results of the analysis indicated that, as a result of Turkey's prospective membership to the EU and/or new tariff reductions by the new Agricultural Agreement, Turkey seems to become a net importer of agricultural products since Turkey's net exports of crop products will not be able to compensate the boom in the net imports of livestock products. Considering agricultural developments in the world, new strategies of Turkey's agricultural policy has to be determined. If an importation increase of Turkey is perceived as an undesirable situation, Turkey may consider the repeatedly measures in agricultural sector. In this context, Turkey may emphasize on productive policies such as research and development, communication, extension and education. Moreover, improvement of the institutional and physical infrastructure should be the other priority of the agricultural sector.

The analysis of this study has been restricted to the 1993-2009 period. Yet, after the second half of 2010 world agricultural commodity prices started to increase very rapidly. A similar spike was observed in June 2008. 2010 price increase related to a series of weather-related supply shocks. However, world agricultural prices indicate a rising trend since 2000, independent of these price fluctuations. If this trend continuous as some International Organizations, IMF and FAO claim, this may also help to the solution of the problems. Increasing world prices along with suitable agricultural policies may encourage domestic production and exports and discourage imports.

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APPENDICES

Appendix A:

A.1. Turkey's Agricultural Foreign Trade (USD million)

Year	Import	Export
1993	24202	37670
1994	19448	42045
1995	37467	44930
1996	42713	49047
1997	43258	55196
1998	36723	50251
1999	27536	44274
2000	34091	38311
2001	26130	43127
2002	32897	40402
2003	43732	52470
2004	48099	63936
2005	49858	81845
2006	53954	84934
2007	74710	96247
2008	104369	112985
2009	77386	110256

A.2. Commodity Composition of Agricultural Imports of Turkey (USD million)

GTIP	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1	103	23	343	167	19	26	24	33	23	16	12	10	14	16	24	41	34
2	31	10	77	25	1	0	0	1	0	0	0	0	0	0	0	1	2
3	23	25	35	34	51	41	29	37	12	19	33	54	69	83	97	120	106
4	28	19	35	41	30	36	36	36	22	37	52	69	76	78	111	127	117
5	7	6	13	16	16	18	17	24	16	27	33	32	31	28	33	29	29
6	10	6	10	18	19	27	21	17	10	12	16	24	34	49	52	58	37
7	40	11	27	21	93	90	57	99	71	52	30	33	79	96	124	400	246
8	54	30	48	61	59	63	75	68	31	65	80	99	154	190	253	319	312
9	25	25	40	40	37	39	26	34	27	23	24	31	40	44	68	73	73
10	343	155	455	775	701	466	403	390	180	376	697	521	190	167	973	2137	1202
11	2	1	4	5	4	5	5	5	5	9	10	12	15	18	21	25	34
12	99	100	237	279	295	353	263	277	163	268	479	530	698	616	1020	1465	1055
13	7	7	10	12	13	16	17	18	19	25	38	41	39	30	21	26	28
14	1	1	3	3	2	3	3	3	2	2	3	4	3	3	4	5	4
15	410	462	640	501	564	517	426	364	314	402	495	511	724	907	796	1658	1094
16	1	0	2	2	2	3	1	1	0	1	1	1	1	2	2	2	3
17	10	1	202	293	43	13	16	15	12	20	34	38	45	39	56	87	56
18	28	4	49	48	63	70	70	63	72	107	199	218	183	186	236	284	306
19	12	33	13	23	27	33	32	33	30	32	52	67	76	96	117	151	147
20	6	10	11	15	21	25	22	19	12	17	16	25	47	57	77	88	55
21	20	5	36	71	82	87	96	109	99	133	157	228	278	332	367	387	329
22	12	19	16	46	22	15	15	15	13	10	19	49	52	74	93	112	128
23	111	14	101	150	184	158	176	206	136	144	200	401	341	316	548	773	556
24	327	85	160	277	383	307	293	351	283	208	235	239	276	256	302	392	400
41	367	140	658	902	785	514	195	383	427	621	615	575	473	566	610	518	297
42	12	438	29	55	89	59	32	71	94	121	112	87	84	112	119	102	51
50	2	16	2	4	4	2	2	3	4	3	3	4	3	3	3	2	2
51	80	1	100	79	84	75	44	51	33	38	50	59	49	52	59	47	25
52	248	47	383	304	632	608	354	681	500	497	675	844	911	974	1283	1006	1008
53	4	240	7	3	1	3	2	3	3	4	3	3	3	3	4	2	2

A.3. Commodity Composition of Agricultural Exports of Turkey (USD million)

GTIP	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1	284	223	132	85	83	48	12	2	44	31	8	7	5	9	7	13	24
2	19	35	16	16	19	20	14	11	17	14	19	22	36	29	47	89	155
3	40	49	49	55	68	40	62	46	55	103	125	181	206	233	273	383	318
4	16	22	28	45	64	58	40	24	41	61	78	66	80	102	168	236	250
5	36	36	43	44	47	45	43	38	28	38	49	48	41	34	35	41	32
6	14	13	15	17	19	19	19	13	14	22	31	38	36	41	46	46	49
7	351	339	378	477	491	393	274	264	375	322	473	486	533	707	861	953	1021
8	917	1114	1235	1138	1309	1294	1247	1030	1201	1193	1392	1903	2501	2388	2671	2855	3001
9	90	47	42	51	73	83	58	59	58	67	61	64	64	71	95	106	97
10	111	151	73	28	77	287	224	224	162	80	56	17	115	201	67	38	205
11	117	157	176	214	310	141	83	102	61	76	140	235	484	322	505	716	666
12	43	51	68	52	55	62	61	43	54	51	73	80	97	116	130	150	155
13	1	2	1	1	1	1	1	1	2	2	2	3	3	3	5	4	2
14	6	8	13	17	13	13	15	15	19	10	17	16	17	13	18	20	11
15	269	274	473	359	400	350	332	157	235	156	347	277	503	513	402	766	511
16	21	0	43	58	64	58	40	45	21	21	32	36	42	32	37	39	40
17	209	29	190	199	252	220	207	232	335	150	187	218	202	274	297	347	294
18	38	310	83	90	98	74	72	80	91	104	181	232	244	272	364	391	372
19	84	49	231	301	298	195	106	113	131	166	239	304	348	402	533	712	678
20	362	120	528	563	617	621	571	486	528	516	671	980	1281	1120	1314	1441	1276
21	38	495	57	85	107	105	85	94	102	129	160	194	236	326	437	546	541
22	25	51	88	105	73	55	42	38	37	42	70	114	149	147	175	194	181
23	3	49	9	14	7	4	6	10	25	12	14	11	15	9	11	52	66
24	441	8	381	638	683	590	562	491	435	385	419	478	590	685	644	705	757
41	13	424	31	33	48	68	48	63	69	67	80	85	87	103	120	121	94
43	59	26	67	54	138	79	86	83	100	138	160	149	155	183	171	141	105
50	0.0	63.7	0.1	0.4	0.1	0.0	0.1	0.3	0.0	0.0	0.3	0.2	0.3	0.2	0.0	0.0	0.6
51	2	0	4	8	15	7	6	5	8	15	16	26	21	21	29	27	13
52	156	7	38	158	91	93	114	60	64	68	145	125	92	139	162	169	113
53	0.0	51.3	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.2	1.0	0.1	0.0	0.1	0.1	0.1	0.1

B.1. Agricultural Products Which Are Eliminated from the Indexes

GTIP CODES	PRODUCTS
10200	Bovine animals, live
10300	Swine, live
10400	Sheep and goats, live
20100	Meat of bovine animals, fresh, chilled
20200	Meat of bovine animals, frozen
20600	Meat and edible meat offal, fresh, chilled or frozen, n.e.s.
20800	Edible offal of swine and poultry, fresh, chilled or frozen
20900	Fats of swine and poultry
21000	Meat and edible meat offal
30710	Oysters, fresh and chilled
30759	Octopus, frozen
50100	Human hair, unworked,
50300	Horse hair
50610	Materials of animal origin, n.e.s.
50690	Bone sand horn-cores, unworked, def
50710	Ivory, tortoiseshell, whalebone and whalebone hair
50790	Bones, horns, ivory, coral, shells and similar products
60120	Bulbs, tubers, tuberous roots, corms
70200	Tomatoes, fresh or chilled
70400	Cabbage and similar edible brassicas, fresh or chilled
70500	Lettuce and chicory (including endive), fresh or chilled
70600	Carrots, turnips fresh or chilled
70700	Cucumbers and gherkins, fresh or chilled
70800	Leguminous vegetables, fresh or chilled
80121	Brazil nuts
80260	Makadamya nuts
80590	Citrus fruit, n.e.s., fresh or dried
80720	Papayas
81210	Cherries provisionally preserved
81290	Nuts, groundnuts and other seeds, n.e.s.
81400	Peel of citrus fruit or melons, fresh, frozen, dried
90300	Maté
90500	Vanilla
100200	Rye, unmilled
100400	Oats, unmilled

100700	Grain sorghum, unmilled
110814	Manioc (cassava) starch
120300	Copra
120926	Timothy grass seeds
121010	Hop cones and lupulin
121410	Lucerne (alfalfa) meal and pellets
121490	Swedes, mangolds, fodder roots, hay, clover and similar forage products
140210	Capok
140290	Vegetable materials of a kind used primarily as stuffing
140390	Vegetable materials of a kind used primarily in brooms or in brushes
150100	Pig fat and poultry fat, rendered,
151000	Oils and their fractions obtained solely from olives
160300	Extracts and juices of meat, fish or crustaceans, molluscs or other aquatic invertebrates
180200	Cocoa shells, husks, skins and other cocoa waste
190240	Couscous
190520	Gingerbread
200540	Peas prepared or preserved otherwise than by vinegar or acetic acid, n.e.s., frozen
200510	Homogenized vegetables
200950	Tomato juice
200960	Grape juice (including grape must)
210130	Roasted chicory and other roasted coffee substitutes
220600	Fermented beverages, n.e.s.
220810	Alcoholic preparations of a kind used for the manufacture of beverages
230500	Oilcake and other solid residues of groundnuts
230700	Wine lees; argol
500100	Silkworm cocoons and silk waste

C.1. Shares of Products in Total Agricultural Imports from the EU

Products	1994	1996	1998	2000	2002	2004	2006	2008
Live animals	1.4	6.7	1.2	1.7	0.6	0.4	0.5	0.7
Meat and meat pre.	1.1	1.4	0.01	0.01	0.00	0.01	0.00	0.00
Dairy products	1.3	1.6	2.1	1.8	1.9	2.2	1.1	1.2
Cereals	4.1	6.3	4.0	6.0	3.6	3.7	1.3	11.0
Oil seeds	1.7	1.3	2.3	3.2	2.2	2.5	2.5	10.0
Animal and Vegetable oil	51.6	29.0	38.2	29.6	29.5	27.6	36.0	40.1
Miscellaneous edible products	1.9	3.8	4.8	7.2	7.8	9.4	10.1	6.4
Residues and waste from food industry	1.5	1.2	1.3	2.0	1.8	2.1	2.5	2.5
Raw hides	20.6	22.5	19.8	16.7	23.6	18.9	13.2	6.5
Raw skins	1.7	2.7	3.8	4.5	7.1	3.6	2.9	1.3
Raw cotton	2.7	5.4	6.6	12.4	8.1	9.3	8.6	3.5

C.2. Shares of Products in Total Agricultural Exports to the EU

Products	1994	1996	1998	2000	2002	2004	2006	2008
Live animals	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1
Meat and meat preparations	0.04	0.03	0.03	0.03	0.06	0.07	0.05	0.04
Fish and fish preparations	1.9	1.6	1.0	1.7	3.3	3.3	3.7	4.6
Vegetables	6.9	7.0	4.5	5.3	6.5	6.2	5.7	7.0
Fruits	38.8	34.8	38.6	37.2	37.0	38.4	35.6	31.0
Products of the milling industry	1.8	1.2	1.7	1.5	0.9	0.7	0.8	0.8
Animal and Vegetable oil	14.2	15.2	14.8	8.8	8.1	8.4	12.5	14.8
Sugar and sugar preparations	1.1	0.6	0.8	1.5	1.4	1.9	1.5	2.6
Pre. of vegetables and fruits	16.2	16.0	17.4	17.9	17.8	20.8	18.3	18.4
Tobacco and tobacco pre.	6.9	8.7	6.0	8.6	6.9	5.2	6.3	5.0
Raw skins	1.8	1.6	1.5	2.0	2.3	1.8	2.2	1.1

D.1. Share of the EU in Total Cereal Imports of Turkey

Year	1995	1996	1997	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Durum wheat	39.9	15.3	18.3	0.2	98.2	100	97.8	36.8	100	100	3.5	67.7	59.6	84.5
Wheat	17.8	20.7	19.7	9.7	32.3	24.2	19.6	23.4	8.5	2.5	14.7	13.7	19.1	19.0
Rye	0.0	0.0	0.0	0.0	100	0.0	97.3	71.3	100	83.0	0.0	100	0.0	0.0
Barley	100	54.6	98.3	52.2	76.3	87.4	100	100	5.9	98.7	100	99.1	31.1	87.5
Maize	0.0	1.0	2.7	1.5	2.4	0.0	0.0	1.2	6.6	14.8	0.8	16.9	1.8	21.5
Rice	2.7	1.7	7.8	14.1	23.3	3.7	10.6	11.0	25.3	20.4	11.5	15.5	28.0	5.9
Oats*	0.1	0.0	0.0	0.0	0.0	0.7	0.0	12.7	0.0	0.0	77.2	2.5	0.0	0.0

D.2. Share of the EU in Total Animal and Vegetable Oil Imports of Turkey

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Fats of bovine animals	7.3	5.6	8.7	26.0	50.0	5.6	1.1	0.00	0.02	0.05	0.03	0.4	0.8	0.0	0.0
Soybean crude oil	59.5	56.1	72.7	75.2	83.0	71.0	51.1	50.6	68.8	90.1	47.4	12.5	23.5	25.3	10.3
Refined soya oil	21.3	100	100	84.9	100	100	100	100	100	100	0.6	0.04	0.00	100	100
Sun flower crude oil	16.1	1.0	11.2	7.9	3.1	3.0	5.6	6.9	0.00	0.02	0.6	0.00	10.5	0.6	1.6
Rape, colza or mustrad oil	70.2	100	100	92.9	100	92.2	87.7	100	84.8	100	94.4	0.00	100	100	66.6

D.3. Share of the EU in Total Residues and Wastes from Food Industry Imports of Turkey

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Flours, meals, pellets	5.73	21.4	3.94	3.26	3.98	21.8	8.24	7.71	0.93	1.20	4.33	1.48	2.53	1.06	0.55
Residues from Soybean oil	0.20	0.08	0.06	0.98	0.04	1.80	0.54	1.88	0.89	0.28	0.18	0.57	0.86	0.67	3.34
Dog or cat food	56.6	58.5	62.3	53.7	56.4	56.1	7.1	7.9	15.9	24.8	28.3	33.3	49.1	48.9	60.0
Other pre. in animal feeding	90.5	62.9	72.5	74.3	68.2	66.9	82.1	88.3	83.6	84.3	77.1	89.8	90.0	83.6	81.1